

MARINE REVIEW.

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No. 15.

Carnegie Dock and Railway Improvements.

In addition to the Rockefeller fleet of eighteen steel vessels, the Carnegie company, or rather the management of the Carnegie mines in the Lake Superior region, will have four other vessels engaged regularly during the coming season, in moving ore to Lake Erie ports. These vessels are the wooden steamers Harper and Nimick, the steel tow barge Tryone and the new steel barge Antrim, being built by the Globe Iron Works Co. of Cleveland. This fleet is managed by G. E. Tener of Pittsburg and is controlled by the Oliver interest that is associated with the Carnegie company in the Oliver and Mountain Iron mines. It is now more than probable that the big improvements in dock property at Conneaut will be so long delayed that a very large part of the Carnegie ore must be shipped throughout this season, as in the past, over other Lake Erie docks and over railroads other than the Pittsburg, Bessemer & Lake Erie. There is considerable doubt as to whether the new docks at Conneaut will be completed in time to handle any ore this season, but the facilities already provided at that port are extensive, and the improvement of both railway and docks is being carried on as rapidly as possible. The contract with the Shoen Pressed Steel Co. of Pittsburg for 600 steel cars is understood to provide for their completion within ninety days. The cars will cost about \$600,000. It is generally expected that the order for these steel ore and coal cars, which are of fifty tons capacity, will result in the wooden car structure soon being a thing of the past on roads operating between the lakes and the furnace and coal districts of Ohio and Pennsylvania. It is claimed that this order will demonstrate the fact that per ton carrying capacity these cars can be built as cheaply as a well designed modern car built of wood and iron, to say nothing of the saving that will be effected in the cost of maintenance and the cost of transporting at least 5,000 pounds of dead weight per car. There has been no substantial improvement in rolling stock equipment, involving such a vast amount of capital, brought to the attention of the railroad public for the past twenty years.

It is expected, of course, that the Carnegie road will develop a large lake coal shipping business in connection with the ore traffic, and it is said also that Connellsville coke will be sent to the west and northwest by this route, in the navigation season, rather than by all rail. Wm. P. De Armit, who has of late been among the most successful of the Pittsburg coal operators, is said to bear close relations to the Carnegie company, and it is thought that he will be found interested in the development of a large coal shipping business through Conneaut, and that his present lake trade will go to that port.

Forms or Types of Clouds.

The hydrographic office, navy department, is about to issue, in two styles, a publication which is unique. It relates to the forms or types of clouds according to the latest nomenclature. There will be:

1. A chart on heavy glazed paper, price 40 cents, containing twelve colored cloud plates; this chart will be suitable for framing.
2. A leather covered book, price \$1, containing sixteen colored cloud plates, the title on the cover to be stamped in gold.

This book represents a great deal of work under the special direction of the present hydrographer, Capt. C. D. Sigsbee, during the last three years, and the work has been subjected to the criticism of specialists in various directions. The plates have been done at the establishment of Messrs. L. Prang & Co., Boston. Mr. Prang says: "I do not believe that any publication ever issued by the government will beat this in wide interest, and it will receive deserved commendation from people of all stations in life—scientific, educational, rural, artistic, and from all quarters of the globe."

As had been expected, the United States light-house board at its meeting on the 5th inst. elected Capt. Winfield S. Schley, U. S. N., as chairman to succeed Admiral Walker, retired. Col. Gillespie of the corps of army engineers succeeds General Wilson as a member of the board.

Nearly All Under Civil Service.

Although vessel owners and captains in different parts of the lakes interested themselves recently in securing the retention of Superintendent McKenzie, at the St. Mary's Falls canal, and were successful in their efforts, it would seem that there was really no necessity of petitioning the president or the senate in this matter, if the present administration is to support civil service regulations as applied to the great number of offices over which the civil service commission is now exercising authority. One of the Cleveland vessel owners who was interested in the movement to retain Mr. McKenzie has just received a copy of a letter recently forwarded to a member of the senate by John R. Procter, president of the civil service commission. This letter would indicate that practically everybody connected with the management of the canal locks, except laborers, is under civil service rules. The letter is as follows:

"In response to your communication, in which you ask to be officially informed if the employees of the government locks at Sault Ste. Marie are in the classified service, I have to inform you that the following positions are embraced within the service classified under civil service rules as reported by the secretary of war: Assistant engineers, superintendent, assistant superintendents, clerks, draftsmen, inspectors, sub-inspectors, recorders, engine men, tug captain, tug engine men, foremen, rodmen, masons, stonecutters, carpenters, custodian, steward, messenger, watchmen and leadsmen. The only positions not embraced within the service classified in the report submitted by the secretary of war, were lockmen, laborers, and cooks. The positions of heliographers, warehousemen and oarsmen do not seem to have been considered, but it is believed that these positions by their nature should be classified, and the attention of the secretary of war will be called to them. Should the duties pertaining to them be incident to classified places, they will undoubtedly be made classified positions."

Lake Freight Matters.

Some sales of Mesabi Bessemer ores have been made during the past few days, and now that the producers of old range ores have perfected their agreement, it is expected that the ore dealers will soon be ready to take up negotiations with vessel owners for freight contracts. In the office of one of the large ore companies it is claimed that at least two representatives of large vessel interests have offered to take ore on contracts to expire Oct. 1 at 70 cents, but most vessel owners are quite positive in declaring that few vessels will be found to accept 70 cents for either the long or short season, so-called. It is quite generally agreed that the difference in the Marquette rate and the rate from the head of Lake Superior will be very small this season. As yet nothing has been accomplished by the vessel owners who are seeking a reduction in unloading charges, although most of the dock managers at Lake Erie ports admit that a reduction should be made. The dock laborers will be forced, however, to bear a large part of the reduction, and uncertainty regarding the position which they may take is probably the cause of delay. The proposition of the vessel owners is to reduce the unloading charge from 16 to 12 cents a ton and to pay only 2 cents a ton for trimming ore at shipping ports.

In the scale of prices adopted by the association of old range ore dealers the reduction from last year is very marked. The price of \$2.65 placed on Norrie ore is practically the basis for all other figures. One ore that brought \$3.40 last season is in the new schedule \$2.40; another well known grade will sell at \$2.92½ against \$4.25 last year. Thus the reduction in many cases is more than \$1.30 a ton.

"The Lights that Guide in the Night" is the title of a very interesting article about light houses, which Lieut. John M. Ellicott contributes to the April St. Nicholas. The two most isolated and exposed light-houses in the world are the Eddystone light-house, off the coast of England at the entrance to the English channel, and our own Minot's Ledge light, near the entrance of Boston harbor.

Senator Frye and the Revenue Cutter Service.

Mr. Frye of Maine, who has for a long time past held the position of chairman of the senate committee on commerce, and who is looked up to in the senate as an authority on all maritime matters, is again preparing to procure, if possible, in the present congress, the passage of a bill providing for the retirement of officers of the revenue cutter service. In a letter to the Review Senator Frye says that he "regards the revenue cutter service as the hardest worked and the most efficient in the government." The bill is one which has been reported to the senate three times by Mr. Frye and passed that body each time, but, as he says, "has been held up by the speaker of the house." The bill provides for the appointment of an examining board by the president, and all officers of the service who may be reported by this board to be permanently incapacitated shall be placed on the retired waiting order list, out of line of promotion, with three-fourths duty pay of their respective grades. Vacancies thus created in the active list are to be filled by promotion in the order of seniority, but the number of officers on the active list is not to be increased and no commercial officer shall be retired from active service who shall not have served as a commissioned officer for a period of ten years, unless he shall have incurred physical disability due to exposure in the line of and incident to the duties of his profession. It is also provided that when any commissioned officer shall have served thirty consecutive years he may be retired from active service by the president, upon his own application, and be placed on a retired waiting orders list, with three-fourths of the duty pay of his grade; and that there shall be allowed and paid each commissioned officer 5 per cent. of his current yearly pay for each five years of service, provided that the total amount of such increase for length of service shall in no case exceed 55 per cent. of the yearly pay of the grade to which the officer belongs.

Commerce at the Head of the Lakes.

During the season of navigation in 1896 there was moved in and out of the harbors of Duluth and Superior, which are the principal ports at the head of Lake Superior, 7,866,833½ net tons of freight, valued at \$111,676,900. The increase in valuation as compared with 1895 is \$16,676,900. These figures are reliable, as they were prepared by Major Clinton B. Sears, United States engineer, who has for two years past insisted on reports from all vessel masters trading to the head of the lakes. The engineer's authority for demanding these reports is contained in the act of Feb. 21, 1891, which provides that reports must be made to the engineers at all points where the government maintains river and harbor works or is engaged in making river and harbor improvements. If engineers at other points on the lakes were disposed to engage in the statistical work that is provided for by this law, it would be possible to secure, through their reports, a complete summary of lake commerce.

The following tables give the commerce of the two ports in detail. The arrivals and departures of both places numbered 10,948, against 10,986 in 1895, but notwithstanding this decrease in the number of vessels, the total registered tonnage in 1896 was 13,353,068 against 11,444,272, indicating a material increase in the size of the vessels. The freight tonnage was 7,866,833½ net tons, against 6,325,351 net tons in 1895.

RECEIPTS BY LAKE AT DULUTH, SEASON OF 1896.

ITEMS		Total.	Net Tons.	Estimated Valuation.
Anthracite coal.....	Tons	263,212	263,212	\$1,250,257
Bituminous coal.....	Tons	398,911	398,911	1,124,929
Lime stone.....	Tons	18,842	18,842	23,552
Salt.....	Barrels	114,292	16,327	72,489
Machinery.....	Tons	435	435	108,750
Manufactured iron.....	Tons	40,386	40,386	1,272,159
Kerosene oil.....	Barrels	1,675	335	9,715
Gen. merchandise.....	Tons	116,002	116,002	11,600,200
Logs.....1000 ft.	B. M.	76,203	.....	533,421
Fish.....	Tons	737	737	58,960
Cement and lime.....	Barrels	40,814	8,163	40,814
Sand.....	Cb. yards	7,820	10,426	3,127
Building stone.....	Tons	9,458	9,458	60,531
Passengers.....	No.	23,176	.....	.....
			883,234*	\$16,160,704

*Not including logs.

SHIPMENTS BY LAKE AT DULUTH, SEASON OF 1896.

ITEMS		Total.	Net Tons.	Estimated Valuation.
Iron ore.....	Tons	1,981,597	1,981,597	\$ 2,318,468
Copper.....	Tons	5,798	5,798	1,159,600
Flour.....	Barrels	3,729,440	372,944	11,188,320
Wheat.....	Bushels	28,925,114	867,753	17,890,183
Other grains.....	Bushels	13,384,718	343,198	6,826,206
Structl. iron or steel.....	Tons	180	180	7,920
Wool.....	L. B. S.	1,870,692	935	205,776
Lumber.....1000 ft.	B. M.	208,516	417,032	2,085,160
Shingles.....M.	No.	12,836	1,605	12,836
Lath.....M.	No.	1,100	275	825
Miscellaneous mdse.....	Tons	17,215	17,215	1,721,500
Passengers.....	No.	22,498	.....	.....
			4,008,532	\$43,416,794

NOTE—Valuations are based on average wholesale prices on board vessels for exports, and landed on docks for imports.

Summary of Duluth commerce—Total receipts and shipments, 4,891,766 net tons; valuation \$59,577,498; passengers arriving and departing, 45,674; vessels entering, 3,737, of which 3,033 were steam and 704 sail; registered tonnage of vessels entering, 4,295,984; vessels departing, 3,686, of which 2,972 were steam and 714 sail; registered tonnage of vessels departing, 4,372,827; total entries and departures, 7,423 vessels; total registered tonnage, entries and departures, 8,668,811; average tonnage, exclusive of tugs, 1,257.

RECEIPTS BY LAKE AT SUPERIOR, SEASON OF 1896.

ITEMS		Total.	Net Tons.	Estimated Valuation.
Anthracite coal.....	Tons	431,031	431,031	\$ 2,047,397
Bituminous coal.....	Tons	972,798	972,798	2,743,290
Building stone.....	Tons	1,350	1,350	8,640
Salt.....	Barrels	118,366	16,909	76,938
Machinery.....	Tons	124	124	31,000
Manufactured iron.....	Tons	21,869	21,869	688,873
Kerosene oil.....	Barrels	79,083	15,817	458,681
Gen. merchandise.....	Tons	53,303½	53,303½	5,330,350
Logs.....1000 ft.	B. M.	20,680	.....	144,760
Cement and lime.....	Barrels	24,994	4,999	24,994
Sand.....	Cb. yards	4,835	6,446	1,934
Passengers.....	No.	1,974	.....	.....
			*1,524,646½	\$11,556,857

*Not including logs.

SHIPMENTS BY LAKE AT SUPERIOR, SEASON OF 1896.

ITEMS		Total.	Net Tons.	Estimated Valuation.
Iron ore.....	Tons	165,033	165,033	\$ 193,089
Copper.....	Tons	49,148	49,148	9,829,600
Flour.....	Barrels	4,291,097	429,109	12,873,291
Wheat.....	Bushels	20,111,692	603,350	12,439,081
Other grains.....	Bushels	5,547,612	142,246	2,829,282
Structl. iron or steel.....	Tons	145	145	6,380
Wool.....	Pounds	9,115,476	4,558	1,002,702
Lumber.....1000 ft.	B. M.	33,232	66,464	332,320
Miscellan. mdse.....	Tons	10,368	10,368	1,036,800
Passengers.....	No.	2,042	.....	.....
			1,470,421	\$40,542,545

NOTE—Valuations are based on average wholesale prices on board vessels for exports, and landed on docks for imports.

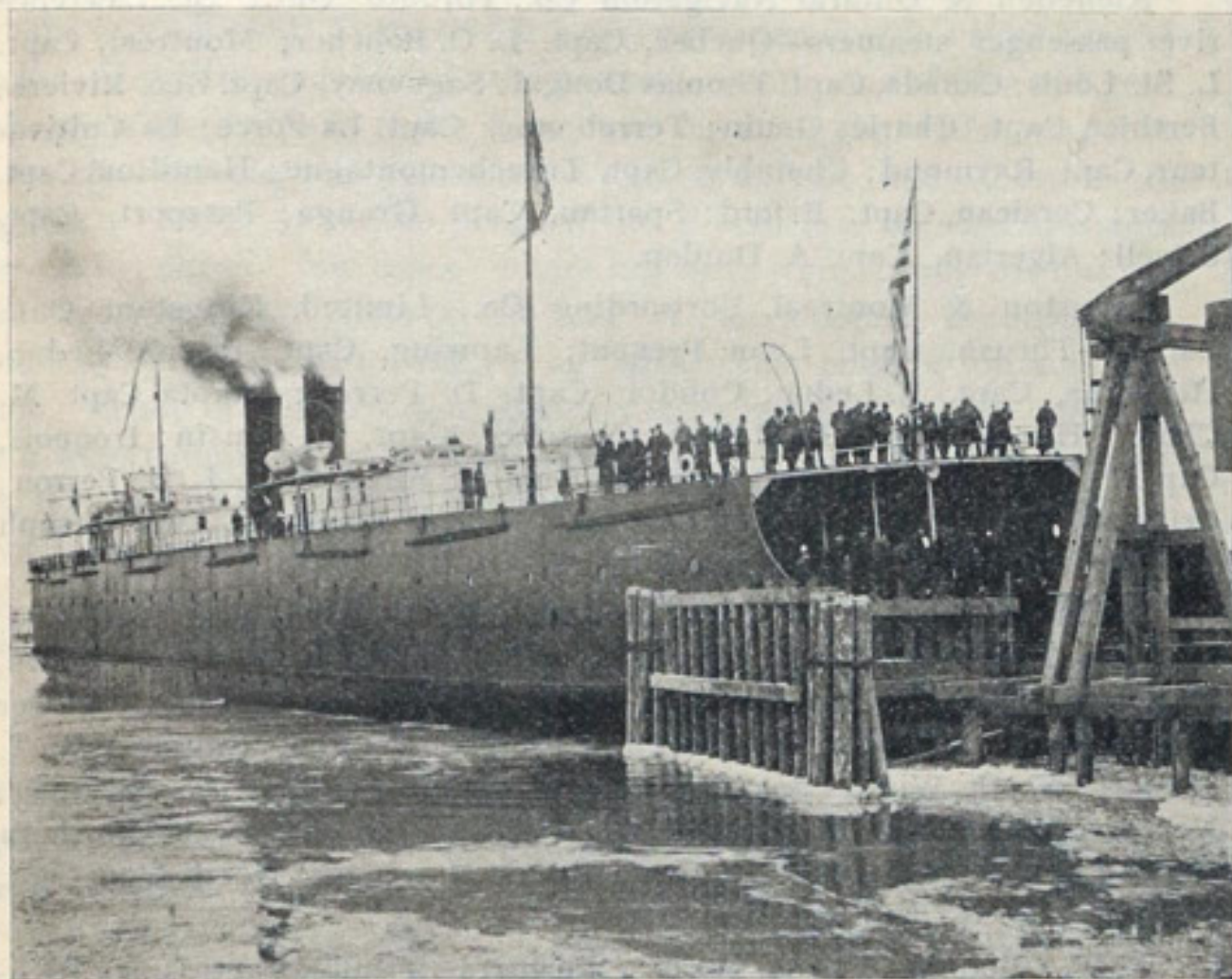
Summary of Superior commerce—Total receipts and shipments, 2,995,067½ net tons; valuation, \$52,099,402; passengers arriving and departing, 4,016; vessels entering, 1,790, of which 1,570 were steam and 220 sail; registered tonnage of vessels arriving, 2,330,117; vessels departing, 1,735, of which 1,512 were steam and 223 sail; registered tonnage of vessels departing, 2,354,140; total entries and departures, 3,525 vessels; total registered tonnage, entries and departures, 4,684,257; average tonnage, exclusive of tugs, 1,446.

The Empress Queen, largest and most powerful paddle-steamer afloat, has just been launched by the Fairfield Ship Building & Engineering Co. for the Isle of Man Steam Packet Co. This vessel is 375 feet long, 83 feet 6 inches beam and 25 feet 6 inches moulded depth, and will have compound diagonal surface condensing engines of 10,000 horse power. The engines are also thought to be the largest of their kind ever built. There are four duoble-ended boilers of the multitubular return-tube marine type, each having eight corrugated furnaces. Howden's system of hot draft will be applied to the boilers.

Army and navy charts of the lakes are kept in stock by the Marine Review, Perry-Payne building.

Numerous Locations for Gas Buoys.

In answer to a request from the Lake Carriers' committee on aids to navigation, members of the Ship Masters' Association are handing in opinions as to the shoals and reefs on the lakes where gas buoys



STERN VIEW OF CAR FERRY PERE MARQUETTE.

will be of most service. Committees from lodges of the captains' organization in Toledo and Cleveland have submitted to Capt. Geo. P. McKay of Cleveland long lists of these shoals, and several letters have also been received from captains who are not members of the

Green bay. It is probable, also, that all dangerous points on the St. Lawrence river above Ogdensburg will be covered by buoys for which one of the New York congressmen has secured a special appropriation, and the Lake Carriers' committee will therefore leave the St. Lawrence to the New York representatives who have been so successful in looking after its interests. Letters from the captains suggest that the large number of buoys that are to be forwarded to the lakes during the coming summer be located as follows :

Lake Ontario—South Charity and Niagara shoals.

Lake Erie—Seneca shoal near Buffalo; Starve island reef; Waverly shoal near Buffalo; new shoal between Kelley's island and South Bass island; new shoal east of Kelley's island; shoal of North Harbor island; Grecian shoal off Little's point.

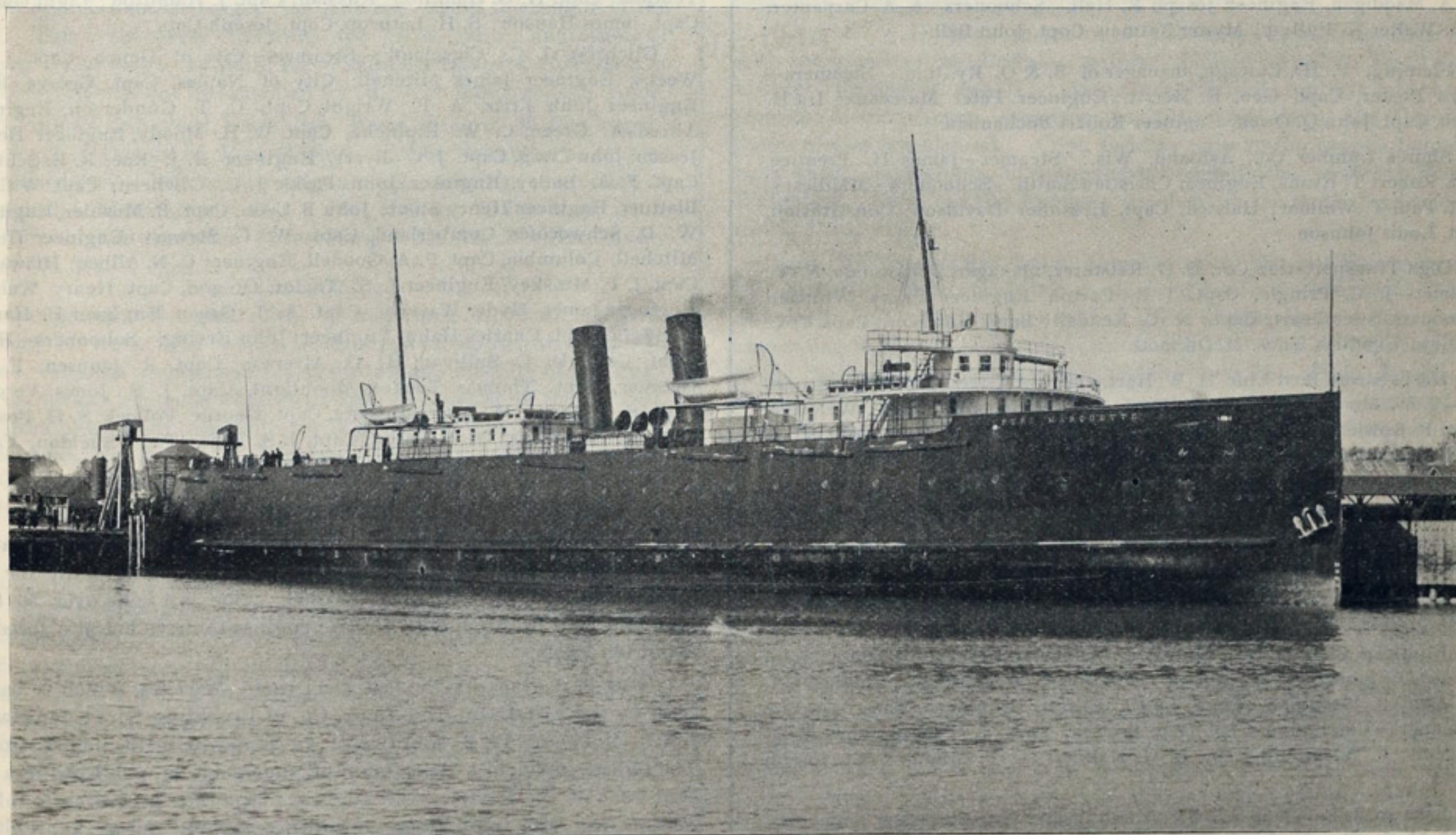
Lake St. Clair and St. Clair river—East bank of St. Clair Flats channel; Head of Russell's island; lower end of Stag island; upper end of middle ground at Port Huron, Canadian side.

Lake Huron and Saginaw bay—Port Austin reef, Point au Burques; off Charity island; Gravely point; North point, Thunder bay; Middle island reef; Cheboygan point; southeast end of Mackinaw island; St. Martin's reef.

Straits of Mackinaw—Rose shoal, near Waugoschance; south of Graham shoal; Vienna shoal.

Lake Michigan—Garden island; Squaw island; South Fox, inside shoal; Spider island, "Death's Door"; Racine reef; Boulder reef; Whaleback shoal, Green bay; Peshtigo shoal, Green bay; Little Bay de Noque shoal, Green bay; Sander's point, Green bay.

St. Mary's river—Five-foot shoal, Detour passage; Point au Chenes, turning point to Mud lake; turning point to encampment in Mud lake, where can buoy is now located; at "Black Hole;" turning point at lower end of dike; off mission point, below Point Iroquois; Round island shoal; reef between Point au Pins and Round island.



CAR FERRY PERE MARQUETTE—IN SERVICE OF F. & P. M. RY. CO. ON LAKE MICHIGAN.

Over all length, 350 feet; beam, 56 feet; depth below main deck, 19½ feet; depth from upper deck to floor, 37 feet; capacity, thirty loaded cars.

association. As some of the places referred to by the captains have already been provided for, it may be well to note again that on the opening of navigation, or shortly thereafter, gas buoys will be found at the following points: Inner and outer ends of straight cut at Toledo; Ballard's reef, Detroit river, three buoys; Lansing shoal, Lake Michigan; Fisherman's shoal, off Washington island, Lake Michigan; Gravely island shoal and Poverty island shoal, entrance to

The large single-sheet chart of Georgian bay, just issued by the British admiralty, was prepared from the surveys on which Staff Commander J. G. Boulton, R. N., has been engaged for several years past. This chart may be had from the Marine Review for \$1.75. The price is higher than is usually charged for navigators' charts, but this one takes the place of probably ten sectional charts and is corrected up to date.

Appointments of Captains and Engineers.

McVittie, A., Detroit: Steamer—Senator, Capt. E. B. McQueen, Engineer A. Carter.

McMillan, Gilbert N., Detroit: Steamer—J. F. Eddy, Capt. Jas. Mara, Engineer H. C. Bowen.

Humphrey, M. W., Detroit: Steamer—A. G. Lindsay, Capt. M. W. Humphrey, Engineer Frederick Huett.

The Kelley Island Lime & Transport Co., Cleveland. Steamer—Albert Y. Gowen, Capt. Chas. C. Smith, Engineer Chas. C. Smith, Jr.

Smith, L. P. & J. A., Cleveland: Steamer—Margaret Olwill, Capt. John F. Brown, Engineer F. W. Wheeler. Schooner—Baldwin, Capt. —.

Connelly Bros., Buffalo: Steamer—Connelly Bros., Capt. A. B. King. Schooners—Ogarita, Capt. Jno. Allen; F. B. Gardner, Capt. J. O. Robinson.

Cummings, M. J., Oswego, N. Y.: Steamer—Parnell, Capt. P. J. Griffin, Engineer Thos. O'Neill; Monteagle, Capt. Wm. Griffin, Engineer John Driscoll.

Alex. R. Sinclair, Duluth, Minn.: Steamer—S. Langell, Capt. Chas. L. Black, Engineer Rob't Campbell. Schooner—Arenac, Capt. Wm. F. Harming.

Kelderhouse, John, Buffalo: Steamers—Thomas Maytham, Capt. Joseph Hulihan, Engineer P. J. Close; America, Capt. J. R. Gibson, Engineer E. A. Barker.

Burdick, Leander, Toledo, O.: Steamers—Panther, Capt. Henry Thompson, Engineer L. H. Sebastian. Schooners—Massasoit—Capt. Andrew W. Stalker.

Mona Transportation Co., W. W. Brown, manager, Cleveland: Steamer—Geo. W. Presley, Capt. Thompson, Engineer Charles Church. Schooner—Nellie Redington, Capt. Packer.

Hurley J. & T., Detroit: Steamer—Majestic, Capt. H. J. Hagan, Engineer Chas. H. Burke. Schooners—Reuben Doud, Capt. O. E. Bullock. Monguagon, Capt. M. J. McNamara.

Kelley, John, Saginaw, E. S., Mich.: Steamer—S. C. Baldwin, Capt. Jas. A. Maddigan, Engineer Joseph R. Hall. Schooners—A. A. Carpenter, Capt. Walter K. Fullum; Myron Butman, Capt. John Bell.

Fleming, P. H., Chicago, manager of B. & O. Ry. line: Steamers—Parks Foster, Capt. Geo. E. Merrit, Engineer Peter Marceaux; Ira H. Owen, Capt. John Q. Owen, Engineer Robert Buchannan.

Shores Lumber Co., Ashland, Wis.: Steamer—James H. Prentice, Capt. Robert T. Evans, Engineer Christian Smith. Schooners—Middlesex, Capt. Paul T. Weimar; Halsted, Capt. Lysander Davidson; Constitution, Capt. Louis Johnson.

Olga Transportation Co., E. G. Reisterer, manager, Tonawanda, N. Y.: Steamer—J. C. Pringle, Capt. T. R. Forton, Engineer Frank Whittier. Schooner—Sweetheart, Capt. N. C. Kendall; Benj. Harrison, Capt. C. C. Hanley; Unadilla, Thos. McDermott.

Hart's Steam Boat Line, H. W. Hart, manager, Green Bay, Wis.: Steamers—C. W. Moore, Capt. Ed. W. Hart, Engineer James Miller; Welcome, Capt. P. Rowlette, Engineer George Colter; Eugene C. Hart, Capt. C. B. Hart, Engineer Willis F. Long; Fannie C. Hart, Capt. H. W. Hart, Engineer, Jules Schram.

Bridges, W. H., Bay City, Mich.: Steamers—Maine, Capt. G. W. Case, Engineer W. Wildman; A. A. Turner, Capt. Chas. Brown, Engineer Frank Houseback. Sail—B. B. Buckhout, Capt. Richard Tomlin; H. W. Hoag, Capt. Thompson; D. Pendell, Capt. Henry Pendell; Exile, Capt. P. Bown; W. H. Crosthwaite, Capt. Chas. Geray; Gebhart, Capt. Brown.

Elphicke, C. W. & Co., Chicago: Steamers—Arthur Orr, Capt. John Massey, Engineer —; Geo. N. Orr, Capt. C. Z. Montague, Engineer N. L. Annis; Josephine, Capt. Lewis Elliott, Engineer Thos. Durkin. Schooners—Carrington, Capt. Geo. Trotter; Thos. L. Parker, Capt. M. J. Pidgeon; F. W. Gifford, Capt. E. G. Kahnert; C. P. Minch, Capt. Joseph Hayes.

Lakewood, Lakeland, Lake Erie and Becker transportation companies, W. H. Mack, Cleveland: Steamers—V. H. Ketcham, Capt. Wm. Ferguson, Engineer Frederick Pontzer; Pascal P. Pratt, Capt. George W. Pierce, Engineer Harry Earaly; George W. Roby, Capt. William Smith, Engineer William Young. Schooners—Wadena, Capt. George Mackie; Annie M. Ash, Capt. Harry Peters; Wm. D. Becker, Capt. George Richards.

Montreal Transportation Co., Kingston, Ont.: Steamers—Active, Capt. —, Engineer —; Bronson, Capt. Jos. Murray, Engineer Robt. Hepburn; Glide, Capt. Thomas Murphy, Engineer Geo. Tuttle; Glengarry, Capt. Gordan Kean, Engineer John Evans; Jessie Hall, Capt. Charles Martin, Engineer Alex. Barton; Jas. A. Walker, Capt. John Boyd, Engineer George Boyd; D. G. Thomson, Capt. James Murray, Engineer George Hen-

derson; Bannockburn, Capt. John Irving, Engineer R. Taylor; Rosemount, Capt. Jas. W. Mawdesley, Engineer H. Thurston. Schooners—Min-nedosa, Capt. John Irwin; Selkirk, Capt. Harvey Calvin; Winnipeg, Capt. Jas. Kirkwood; Dunmore, Capt. John Phillips; Melrose, Capt. James Fleming.

Richelieu & Ontario Navigation Co., Toronto, Ont.: St. Lawrence river passenger steamers—Quebec, Capt. L. O. Boucher; Montreal, Capt. L. St. Louis; Canada, Capt. Thomas Dougal; Saguenay, Capt. Geo. Riviere; Berthier, Capt. Charles Gouin; Terrebonne, Capt. La Force; La Cultivateur, Capt. Raymond; Chambly, Capt. Tranchemontague; Hamilton, Capt. Baker; Corsican, Capt. Esford; Spartan, Capt. Grange; Passport, Capt. Sewell; Algerian, Capt. A. Dunlap.

Kingston & Montreal Forwarding Co., Limited, Kingston, Ont. Barges—Thrush, Capt. Leon Pregent; Lapwing, Capt. Joseph Leduc; Hiawatha, Capt. E. Leduc; Condor, Capt. D. Perron; Dakota, Capt. M. Chatel; Huron, Capt. T. Hebert; Cherokee, Capt. T. Lousin; Iroquois, Capt. F. Mathews; Beauport, Capt. N. Gamlin; Siren, Capt. I. D. Perron; Princess, Capt. F. Poirier; Jet, Capt. D. Semcal; Bismarck, Capt. Joseph St. John; Virginia, Capt. Joseph Pugen.

Northern Steamship Co., Buffalo: Steamers—North West, Capt. Geo. A. Minar, Engineer John A. Currier; North Land, Capt. Wesley C. Brown, Engineer John C. King; Northern King, Capt. M. H. Murch, Engineer Jno. O'Mara; Northern Queen, Capt. John F. Vaughn, Engineer A. T. Stewart; North Wind, Capt. Delos Waite, Engineer Thos. W. Jackman; Northern Wave, Capt. Martin Niland, Engineer Jno. J. Darcey; Northern Light, Capt. M. J. Haberer, Engineer Frank Harringer; North Star, Capt. William Thorne, Engineer Wm. Pike.

F. W. Gilchrist, Alpena, Mich.: Steamers—Viking, Capt. Harry Richardson, Engineer Robert Leitch; Norsman, Capt. H. L. Foster, Engineer Thad. Kneal; Stephen C. Hall, Capt. H. Bennett, Engineer —; Garden City, Capt. James Brines, Engineer —. Tugs—Ralph, Capt. James Putnam, Engineer Antwem Denny; Arthur D., Capt. John Kenyon, Engineer Samuel Kissick; Frank W., Capt. John Lawson, Engineer Byron Persons; John Owen, Capt. Thomas C. Lillis, Engineer David Thompson. Sail—Vinland, Capt. Charles Hanson; Nellie Mason, Capt. J. B. Mitchell; Sam Flint, Capt. Thomas Stephens; J. B. Kitchen, Capt. B. McCaffrey; Knight Templar, Capt. H. G. Hamilton; Russian, Capt. J. Hamilton; Light Guard, Capt. James Hanson; S. H. Lathrop, Capt. Joseph Cota.

Gilchrist, J. C., Cleveland: Steamers—City of Genoa, Capt. J. L. Weeks, Engineer James Mitchell; City of Naples, Capt. George Bell, Engineer John Fritz; A. P. Wright, Capt. C. T. Gunderson, Engineer Alfred A. Green; C. W. Elphicke, Capt. W. H. Moody, Engineer Henry Jesson; John Craig, Capt. J. C. Byers, Engineer E. J. Rae; R. E. Schuck, Capt. F. A. Bailey, Engineer John Parks; J. C. Gilchrist, Capt. William Blattner, Engineer Henry Stone; John B. Lyon, Capt. B. Moshier, Engineer W. D. Schwocofer; Cumberland, Capt. W. G. Stewart, Engineer Henry Mitchell; Columbia, Capt. F. A. Goodell, Engineer C. N. Allbee; Hiawatha, Capt. J. P. Minskey, Engineer J. S. Taylor; Oregon, Capt. Henry Walper, Engineer James Hyde; Waverly, Capt. A. J. Green, Engineer E. Harris; V. Swain, Capt. Charles Hahn, Engineer John Erving. Schooners—H. A. Kent, Capt. D. C. Sullivan; H. D. Alverson, Capt. R. Janssen; F. A. Georger, Capt. Thomas Tucker; Moonlight, Capt. J. S. Jones; Verona, Capt. S. C. Philp; W. S. Crosthwaite, Capt. George Pollock; S. H. Foster, Capt. K. Hamringa; M. S. Bacon, Capt. J. S. Ellis; T. P. Sheldon, Capt. Jno. McNamara; S. L. Watson, Capt. W. F. Hornig.

In General.

It is understood that the new Holland submarine torpedo boat at Lewis Nixon's ship yard, Elizabethport, N. J., is being built for the market and is valued at about \$30,000. She is a trifle over 50 feet long and will be fitted with electric engines to drive her at a speed of about ten knots.

Sizes of engines for the fast steel yacht Marietta, which is being built by the Erie Basin Dry Dock Co. of Brooklyn, N. Y., for Harrison B. Moore are 14, 21 and two of 24 inches with 18 inches stroke. The figures given in a description of the yacht, as published in a recent issue of the Review, were slightly inaccurate, according to information from Mr. John Haug, consulting engineer and naval architect of Philadelphia, who designed the machinery for the builder, J. W. Sullivan of New York.

Commander Folger, light-house inspector at Detroit, will open bids on the 12th inst. for the care of buoys on the St. Mary's river, and it is to be hoped the contract will go to P. M. Church of Sault Ste. Marie, who has cared for the buoys during several seasons in the past. The service last season was highly satisfactory, and vessel masters have repeatedly expressed a desire to see this work given out on the merit of the service, rather than at a low price that would not admit of efficient service.

Hull Insurance.

The great bulk of hull insurance on the lakes has been placed, and a very large part of it has gone to the Peck & Peck combination, which was first to make up its pool and offer rates. All of the principal lines in the different lake cities have closed up their insurance, and the business still uncovered is largely wooden vessels below the A1 grade. Until the opening of the present week none of the old general agents were able to make rates, and the struggle, which was first on the steel vessels, was between the new syndicate and Johnson & Higgins. As far as can be learned the 3-cent rate on steel steamers was cut in only a few cases where big lines were involved, but the published rate of 4½ cents on the best of the wooden steamers was considerably above the range at which this class of tonnage was taken. Some of the wooden steamers were taken at 3.75 to 3.86 and there were rumors of rates even lower than these. Within the past few days one of the general agencies, Smith, Davis & Co. of Buffalo, have made rates that are said to be equal to those of the combination, and their representatives claim that by doing so they have managed to retain many of their old customers.

Ship Yard Matters.

Tonnage of the new steel barge Carrington, owned by C. W. Elphicke & Co. of Chicago, is 3,180.92 tons gross and 2,861.30 net. It is understood that the owners of this vessel are greatly pleased on account of her delivery ahead of time by the Chicago Ship Building Co. The big Wolvin steamer, which is fitted with quadruple expansion engines and Babcock & Wilcox boilers, has also been hurried by the Chicago company. It is expected that she will be ready for her trial trip about the 15th inst.

Constitution is the name selected for the new steel barge building at West Superior for the Inter Lake Co. of Cleveland. This vessel, which will be managed in the office of Pickands, Mather & Co., will be launched about the 17th inst. The Globe company of Cleveland will also launch another barge, the Antrim, about the middle of the month. This is the vessel building for G. E. Tener and others of Pittsburg. The barge building for James Corrigan of Cleveland at the Globe yard will not be launched for three or four weeks to come.

At Puller's ship yard, Sault Ste. Marie, a tug of 50 feet length, for Marks & McDonald of Port Arthur, will be launched as soon as the ice disappears. Two wooden tugs are also nearing completion at the dry dock in Collingwood, Ont. One of them, 70 feet long, is for J. & C. Noble, and the other, 45 feet long, is for Ainsworth & Ganley of Sault Ste. Marie, Ont.

It is expected that a great deal of important information regarding the use of water tube boilers in big ships of the British navy will be given out from official sources at the annual meeting of the Institution of Naval Architects, which will open in London on the 7th inst. Two papers bearing on this subject will be read by admiralty officials. One of them by Mr. A. J. Durston, C. B., will deal with "Recent Trials of the Cruisers Powerful and Terrible," and the other, "Water Tube Boilers in War Ships," is by Rear Admiral C. C. P. Fitzgerald, R. N.

"I am afraid," says one of Mr. G. E. Tener's friends from Pittsburg, "that our people are taking chances in going to the north of Ireland for names for their steel barges. We have the Tyrone, and now the new steel barge at the Globe works is to be called Antrim. We may run up to a Dutch dock some day and find trouble on account of these names, and then, too, there is the danger of some Irishman, who has no use for the counties of the north, using his shovel to punch a hole in the bottom of one of the barges after the ore is out of her."

The first number of Marine Engineering, a New York monthly publication for which preparations have been going on for some time past, was issued a few days ago. It is clean typographically and although there is nothing new or especially interesting in the collection of reading matter, the editorial pages as a whole give evidence of careful work. H. L. Aldrich, who was at one time engaged in newspaper work in Cleveland, is the business manager.

Now that the Lake Ontario grain movement will be increasing, masters will want Lake Ontario general chart No. 61 and coast chart No. 1, as well as St. Lawrence river charts Nos. 4, 5 and 13. The five will be sent by the Review to any address by express for \$2.

Around the Lakes.

Capt. James A. Harbottle, who had been in the employ of the Niagara Navigation Co. for several years past, died at his home in Toronto on Thursday last.

Capt. E. G. Ashley of Toledo, has made the naval reserve organization at that point a present of the old lumber barge Brooklyn. The vessel will be fitted up for training purposes.

A correspondent at Cheboygan, Mich., has been kind enough to send the Review several important news items of late, but as he does not give us his name they can not be printed.

Citizens of Collingwood, Ont., are endeavoring to induce the Canadian government to assist them in deepening their harbor to 18 feet. It is said that in case this is done the Grand Trunk railway will erect a new elevator, with a capacity of 600,000 bushels, in connection with a steamboat line between Collingwood and Duluth.

As announced in the appointments elsewhere in this issue, the chief officers of the Northern line passenger steamers during the coming season will be George A. Miner, captain, and John A. Currier, chief engineer, on the North West, with Wesley C. Brown and John C. King occupying, respectively, similar positions on the North Land.

According to a late report from Ashtabula, the Lake Shore Ry. Co. is to build large sheds at that point for the handling of package freight, and some of the vessels of the Western Transit Co. (New York Central Line) will stop at that point during the coming season, to take care of a business south and east of Pittsburg, which can be handled at Ashtabula by branch lines of the Lake Shore.

The people of Sault Ste. Marie, who induced the Lake Carriers' Association at its annual meeting to recommend to the Michigan legislature that an old Sault canal fund of \$68,000 in the Michigan treasury be turned over to the government for a marine hospital, are again disappointed. Although this fund really belongs to the shipping interests, as it was made up from tolls collected at the Sault, the Michigan statesmen plead poverty and refuse to give it up.

Capt. C. V. Gridley, inspector of the tenth light-house district with headquarters at Buffalo, will be relieved April 30, by Commander Theodore F. Jewell. Commander Jewell has just returned from the Mediterranean squadron, where he commanded the United States cruiser Marblehead. Capt. Gridley goes to the League Island navy yard, Philadelphia, to command temporarily the receiving ship Richmond. Capt. Gridley had been on duty in the tenth district for nearly three years.

One of Chicago's fire boats, the Yosemite, ran into the steamer City of Berlin, while answering an alarm of fire in the winter of 1894. The Berlin was in winter quarters. Her owners claimed damages amounting to \$6,000. The city resisted the libel filed by the owners of the Berlin, on the ground that the city was not liable for any damages that occurred from the operations of its fire department. Judge Grosscup of the United States district court said that in common law and under several decisions of the state the city was not liable, but under maritime law, he held that the craft itself is always liable for the damages it causes to the value of itself.

Major Clinton B. Sears, United States engineer at Duluth, opened bids a few days ago for building a pier extension at Portage Lake ship canals, and there were nineteen proposals on the job, which involves an expenditure of about \$120,000. Powell & Mitchell of Marquette were the lowest bidders at \$39.10 per foot for superstructure of Norway pine and \$40 per foot for superstructure of white pine, with a deduction of 40 cents if small stones are used instead of brush mattress. Other bidders were: Samuel Meniece, Porter Bros., King & Steele, James Sullivan & Wm. W. Lavanway, P. McDonnell and A. & D. Sang, Duluth; Winston Bros., Minneapolis; Eslow & Monroe, Charlevoix, Mich.; James Pryor, Houghton, Mich.; Chicago Star Construction & Dredging Co., Heldmaier & Neu and McArthur Bros., Chicago; Lipsett & Gregg, Sault Ste. Marie, Mich.; C. E. Mitchell & Co., Ludington, Mich.; Wm. McCurdy, Houghton, Mich., and Alex. McCurdy, Duluth; Green & Anderson, Green Bay, Wis.; James A. Burke, West Superior; Butler-Ryan Co., St. Paul.

Subscribers to the Review who wish to have it sent to them during the navigation season in care of the marine postoffice, Detroit, are requested to send in notification to that effect at once. It will be impossible to make changes in accordance with past seasons. Papers will be continued to old address unless orders to change are received.



DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 409 Perry-Payne Building, Cleveland, Ohio, by John M. Mulrooney and F. M. Barton.

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Entered at Cleveland Post Office as Second class Mail Matter.

The books of the United States treasury department on June 30, 1896, contained the names of 3,333 vessels, of 1,324,067.58 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1896, was 383 and their aggregate gross tonnage 711,034.28; the number of vessels of this class owned in all other parts of the country on the same date was 315 and their tonnage 685,204.55, so that more than half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1896, was as follows:

	Number.	Gross Tonnage.
Steam vessels.....	1,792	924,630.51
Sailing vessels and barges.....	1,125	354,327.60
Canal boats.....	416	45,109.47
Total.....	3,333	1,324,067.58

The gross registered tonnage of the vessels built on the lakes during the past six years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30, 1891.....	204	111,856.45
" " " 1892.....	169	45,968.98
" " " 1893.....	175	99,271.24
" " " 1894.....	106	41,984.61
" " " 1895.....	93	36,352.70
" " " 1896.....	117	108,782.38
Total.....	864	444,216.36

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC. (From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			Suez Canal.		
	1895*	1894	1893	1895	1894	1893
No. vessel passages.....	17,956	14,491	11,008	3,434	3,352	3,341
Tonnage, net registered.....	16,806,781	13,110,366	9,849,754	8,448,383	8,039,175	7,659,068
Days of navigation.....	231	234	219	365	365	365

* 1895 figures include traffic of Canadian canal at Sault Ste. Marie, which was about 1/4 per cent. of the whole, but largely in American vessels.

As a result of a recent discussion in parliament, the British admiralty was asked what was the total consumption of coal during the thirty-hours' trial of the Powerful, how many boilers were used, and what was the average indicated horse power and speed maintained during the trial; and what number of vessels, other than the torpedo boats and destroyers, had been fitted, or were being fitted, with tubulous water boilers, with the aggregate indicated power of their engines; and if any and which of them had yet been tried on an over-sea voyage, and to what place. The answer was as follows: "The number of boilers in use on the thirty-hours' trial of the Powerful was forty-eight, the total consumption 453 17-20 tons, the average indicated horse power 18,459, and the average speed 20.95 knots per hour. There are thirty-nine vessels in the navy, other than torpedo boats, destroyers, and small craft, fitted or being fitted with water tube boilers. The aggregate horse power of these vessels is 421,800. Of these the Speedy and Sharpshooter have been employed on service with the channel Squadron, the Speedy since Feb. 20, 1894, and the Sharpshooter from Sept. 15, 1894, to May 6, 1895. It may be noted that the French man-of-war Alger recently returned from China after a three years' commission, and we have been informed there were no defects in her boilers, which were of the Belleville type, and that they worked satisfactorily during the whole commission."

Light-house keepers on the lakes have of late been joining an organization known as the Light-House Keepers' Association of America. One of the main objects of the association is to secure the passage of a bill providing for retirement and pensions among employes of the light-house service. With employes of the revenue cutter service, life saving service and various other branches of the government seeking pension regulations, it is more than probable that public sentiment in the future will be more opposed than it has been to anything of this kind, and the formation of societies among employes of the government to force their bills through congress will only tend to increase the opposition.

The fastest ship afloat in the world is the Star, one of the latest of the British torpedo boat chasers, which recently attained a speed of 32 1/2 knots, equal to 36 1/2 statute miles. She is 215 feet over all and 20 feet 9 inches beam, and is the first of eight similar vessels for which Palmer's Ship Building & Iron Co., a Tyneside firm, received an order, some time ago, from the British admiralty. She has twin-

screw engines supplied with steam by four water tube boilers of the Reed type.

A correspondent at Sheboygan, Wis., sends the Review directions for marking tools. "Much trouble can often be saved," he says, "by marking tools with the owners' names, which can be easily done in the following manner: Coat the tools with a thin layer of wax or hard tallow, by first warming the steel and rubbing the wax warm until it flows; then let it cool. When hard, mark the name through the wax with a graver, and apply weak nitric acid. After a few moments wash off the acid and wipe with a soft rag, when the letters will be found etched into the steel."

A few ship builders left in New England still engage in building a large wooden schooner occasionally. N. T. Palmer of Bath, Me., who recently launched a four-masted schooner, the Frank A. Palmer, which measured 2,015 gross tons, and which was 236 tons greater than the Governor Ames, previous champion schooner of the Maine district, is now preparing to build next winter a vessel that will be 25 feet longer and 300 tons larger than the new Palmer.

American members of the International Marine Conference, which prepared the new rules of the road that are to go into effect July 1, have again been holding meetings in Washington with a view to amending the American rules as to coast and inland waters, to make them conform with the international rules, but it is fully understood that any new rules that may be adopted will not interfere in any way with the White law, which governs lake navigation.

Advertisements for proposals for the construction of the three new torpedo boats authorized by the last congress are about ready for publication. Secretary Long has decided that the appropriation of \$800,000 shall not include armament and armor, for which an additional appropriation must be asked for. This decision is contrary to the view taken by Secretary Herbert and most previous secretaries. It will enable the department to contract for vessels of larger size than at first contemplated.

New York friends of Gibson L. Douglass, late manager in New York of floating property of the New York Central Railroad, and now vice president and general manager of the Western Transit Co., with headquarters at Buffalo, are making elaborate preparations for tendering him a complimentary dinner, which will take place at the Hotel Marlborough, New York, probably on the 10th inst. Geo. L. Norton of the Marine Journal is a member of the committee on arrangements.

The volume, value, and variety of products composing the commerce of the great lakes, the localities from which they are assembled, and their destination, demonstrate that the American nation as a whole is interested in its development and improvement, and places the expenditures made by the general government upon the canals, harbors, and channels of the great lakes as truly of national importance.—John Birkinline, statistician for United States Geological Survey.

Returns to the bureau of navigation, treasury department, show that for the last nine months American vessels built and documented were 460 of 125,035 gross tons, compared with 452 vessels of 116,560 gross tons for the corresponding period of the previous fiscal year. The construction for the last nine months comprised 258 sail vessels of 41,950 tons and 202 steam vessels of 83,084 tons.

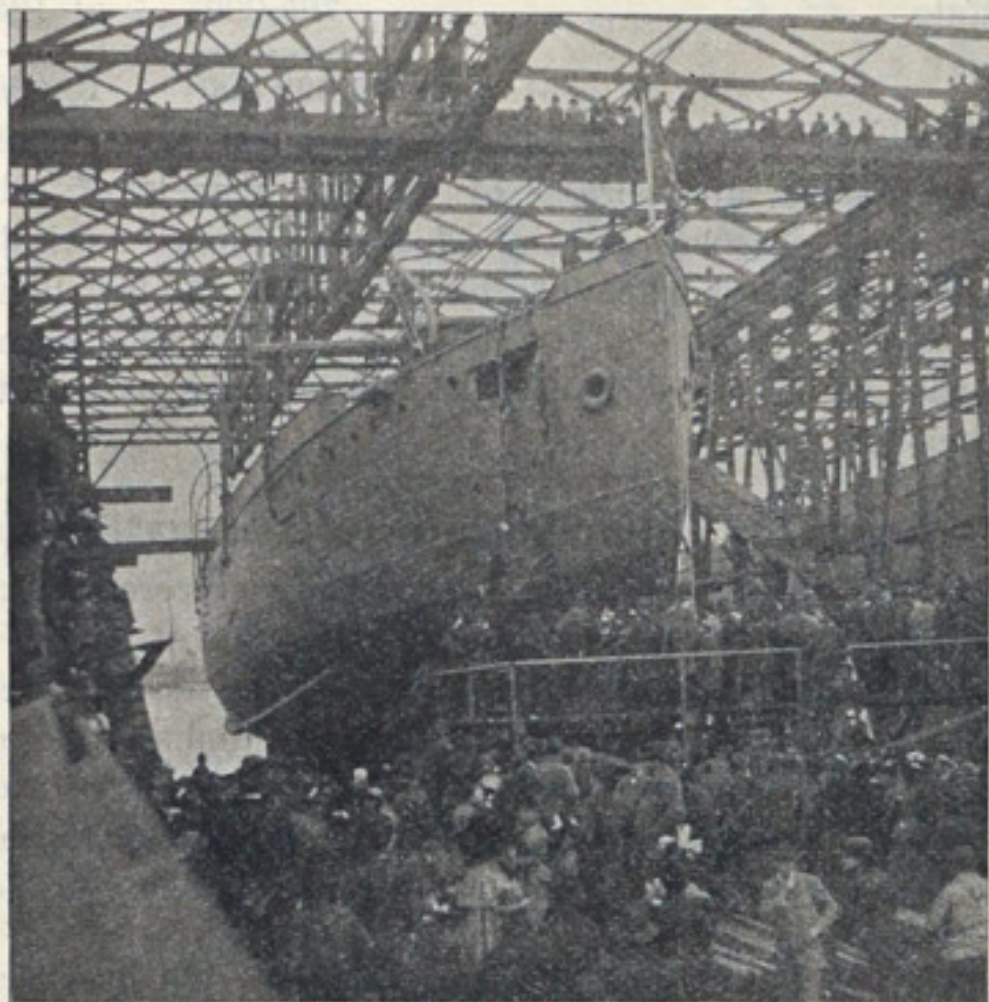
Supplies of two of the finest charts ever seen on the lakes have recently been received by the Marine Review. One covers Green bay entire and the other takes in all parts of Georgian bay. Both are on a large scale and both are corrected up to date. The Georgian bay chart is one of the results of the British survey which has been going on for several years past.

The combined lengths of ore shipping docks at Two Harbors, Duluth, Escanaba, and other points on Lake Superior and Lake Michigan exceed five miles and the total capacity of 4,600 pockets in these docks is 634,000 gross tons.

The wharfage front of the Greater New York will be seventy-five miles, and in this respect New York will greatly exceed either London or Paris.

Lake Men on the Pacific Coast.

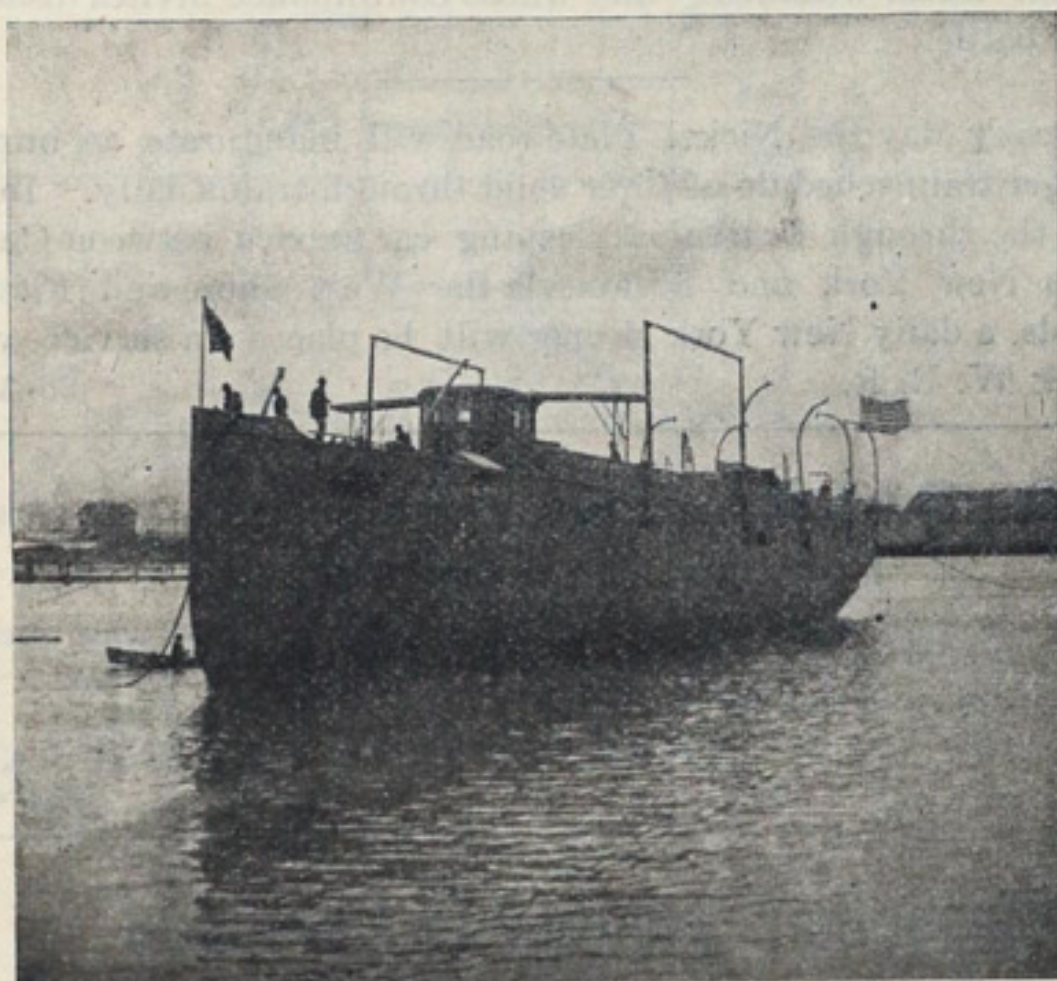
San Francisco, March 29—Photographs of the gunboats Marietta and Wheeling, which I send you herewith, may prove interesting to readers of the Review, especially as one of them shows a part of the ship yard plant at the Union Iron Works. They were made by Mr. Young, who was for some time with the Union Dry Dock Co. of Buffalo, but who is now employed here with several other draughtsmen from the lakes. The plant of this establishment is much more substantial than anything I have seen in this country. The offices



UNITED STATES GUNBOAT MARIETTA.

are in a handsome new building of stone and brick, in which there is every conceivable comfort and convenience. About thirty draughtsmen are employed at present, two-thirds of them being engaged on machinery and one third on hull work. They work only eight hours a day, but the method is like clock-work, beginning promptly at 8 a. m. and quitting at 4:40 p. m., with forty minutes at noon for lunch.

These gunboats were launched together at the same instant from different ways. They are light draft, composite structure and have a displacement of about 1,000 tons. They are fitted with twin screws



UNITED STATES GUNBOAT WHEELING.

and will carry a very small amount of canvas. One is provided with water-tube boilers of the Babcock & Wilcox type and the other with Scotch boilers fitted with the Howden system of hot draft. The trials of these two vessels will attract considerable attention, as an opportunity will be offered in them to compare the Babcock & Wilcox boiler and the old Scotch type fitted with forced draft. The boats are required to develop a speed of twelve knots an hour on their trials. The builders promise that they will materially exceed this. Dimensions of the vessels, identical in each case, are as follows: Length

on load water line, 174 feet; beam on load water line, 34 feet; draught, normal, from under side of keel, 12 feet; displacement, normal, 1,000 tons; indicated horse power, 800. Engines are of the triple expansion, vertical, direct acting type. The high pressure cylinder is 12 inches; intermediate pressure cylinder, 18½ inches, and low pressure cylinder, 28 inches, the stroke of all pistons being 18 inches. The engine frames are made entirely of bronze, and the engines, at full power, are expected to make about 200 revolutions per minute, with a steam pressure of 180 pounds in the boilers.

R. C.

Low Cost of Handling Coal.

Car dumping machines are not the only appliances that are being used to great advantage in reducing cost of handling coal on the lakes. With the system of large pockets and chutes in vogue on the hard coal shipping docks at Buffalo and Erie, the cost of transferring anthracite from cars to vessels has been reduced to figures that are nominal as compared with other charges attending the shipment, and now it is announced that this same coal can be transferred from vessels to docks at upper lake ports for less than 3¼ cents per gross ton. In this connection the following extract from the last annual report of President E. P. Wilbur of the Lehigh Valley Co. will prove interesting: "The cold storage plant at West Superior has been completed and kept in successful operation throughout the year 1896. Active operations upon the Calumet dock, which is located at One Hundreth street, South Chicago, were commenced on Feb. 1, 1896, and the machinery completed and put in operation July 13. The plant is designed to transfer coal directly from vessels to cars or to put it into storage and later to transfer it to cars. It consists of three large wooden storage sheds and a set of reloading pockets along the dock front, all covered with corrugated iron. Both the storage sheds and pockets are provided with necessary elevators, screens, conveyors and other appliances for economical handling. The coal is unloaded from vessels by means of five towers, with automatic clam-shell buckets. The entire cost of the plant, machinery, dock repairs, dredging slip, etc., was \$205,847.81, exclusive of the cost of the real estate. This dock, though differently designed, works upon the same general principle as our dock at West Superior and is most satisfactory. The average cost of discharging vessels at West Superior during the boating season was 3.63 cents per gross ton, and at Calumet dock, for three months, the average cost was 5.49 cents per gross ton, as against a cost of 17.17 cents per gross ton under the old system at Chicago avenue and 19.06 per gross ton at Harrison street, Chicago. The reason for a higher cost at the Calumet dock than at West Superior is because of the lack of experience in handling the machinery. Next season should show the cost of discharging at each to be the same."

A rare collection of books on steam navigation is catalogued in a pamphlet received from Edward Baker, book seller of 14 John Bright street, Birmingham, England. The price of the pamphlet is 6d and it is entitled "A Chronicle of Books Relating to Steam Navigation, the Navy and Allied Subjects." It contains titles of books and pamphlets on the history of the navy, ship building, navigation, history of the steamboat, history of the marine engine and many other subjects. The oldest of these publications is a folio pamphlet of thirty-six pages published in 1681, entitled "The Triumphs of Justice." This recites various public complaints against the administration of justice in the days of the Stuarts, including one against ship money. Another old pamphlet is "Curiosities of Naval Law," published in 1722. Another interesting title is "The Lives of the Admirals," published in 1758, in four volumes, with maps and portraits. This division of the catalogue, bearing especially on the navy, fills ten pages. In the division of ship building the oldest title mentioned is 1765, being "Murray on Ship Building and Navigation." The division on the history of the steam engine begins with Partington's, "History," published in 1822. This is followed by Stewart, Galloway, Tredgold, Lardner and others, coming down to our own time.

When Going to

Pittsburgh take Pennsylvania No. 10, "The Flyer." Leaves Union station 8 a. m. daily, Euclid avenue 8:10 a. m.; arrives Pittsburgh 11:30 a. m. Solid vestibuled train, Pullman Buffet Parlor car attached to train.

Apl 15

The Review has excellent photographs of lake ships.

Trade Notes.

A boiler shop 300 feet long and 105 feet wide will be built by the Standard Oil Co. at Bayonne, N. J. The steel work will be designed and erected by the Berlin Iron Bridge Co. of East Berlin, Conn.

Steam users will find the illustrations in J. L. Robertson & Son's catalogue, published recently, of value to them. Any one mentioning the Marine Review in their request, which should be addressed to the firm at 40 Cortlandt street, New York, will receive a copy free.

The United States gunboats Wilmington and Helena, recently completed by the Newport News Ship Building & Dry Dock Co., and which proved highly satisfactory on their trials, are fitted with Blake pumps of the improved admiralty pattern for boilers, fire service, bilge, wrecking, etc.

L. W. Ferdinand & Co., dealers in yacht and boat fittings, yachting hardware, paints, oils etc., had been located at No. 267 Federal street, Boston, for more than a quarter of a century, but the building was torn down to make way for the big new terminal station, and they were forced to remove to 176-184 Federal street, corner of Purchase. In the new store there is, however, almost double the space that was available in the old building. Two floors are devoted to the display of a line of boats, oars, etc.

The strongest, easiest working and most durable roller bushing in the world, is the claim made for Ferralls' patent long bearing, self-adjusting, five-roll sheave, manufactured by the Bagnall-Loud Block Co., 162 Commercial street, Boston. The rolls are slotted in the centre, run on an interior rail, and have a separator to keep them apart. The box that holds the rolls is divided laterally and is interlocked on both sides. It is said this is far superior to the bushing bought by the United States government recently.

In answer to inquiries regarding trade conditions a letter from the office of the Magnolia Metal Co., New York, says that the company closed its fiscal year on the first of March and found that sales of Magnolia metal in America had been 25 per cent. larger than they were the year before, and that the volume of business exceeded that of any previous year during the past ten years. This has nothing to do with European business which was found to be larger than the business in this country. On the first of May the office of the company will be changed from 74 Cortlandt street to 266 and 267 West street, where the entire buildings will be occupied. The change is made in order to secure increased facilities for storage, shipping, etc.

In a catalogue just published the Hayden & Derby Mfg. Co., No. 111 Liberty street, New York, present revised price lists on parts of the Metropolitan double tube injector and H-D ejectors, which are now in force. This type of injector, together with the H-D ejector, or jet pump are very clearly illustrated. Then the subject of the catalogue is treated in a general way, showing first the use of injectors and the necessity of perfectly adapting them to different conditions, together with suggestions as to the proper type to select and how to get at the proper size to be used. This is followed by a description of the Metropolitan automatic injector showing arrangement of nozzles and what it will do, with tables of capacity under various conditions found in practice. The Metropolitan double tube injector is treated in the same way, as is also the H-D ejector.

The Buffalo Forge Co., Buffalo, N. Y., reports an increased demand for artificial draft apparatus. A letter from one of the officials of this company says: "Within the past ten years, mechanical draft apparatus, both forced and induced, has rapidly grown into popular favor. Some time ago, induced draft was scarcely known, but with its attendant short stack, it is to-day considered for nearly every large boiler plant, and adopted in preference to the chimney in many instances. It is by some engineers preferred to the forced draft apparatus. The difference between the two systems is quite generally understood. In forced draft installations the air is introduced directly under the grates, while with our induced draft specially designed fans are used to draw the gases from the boilers, all of which pass through the fans. These are built with water cooling boxes and overhung wheels, with or without direct attached engines, and in the full or three-quarter housing form as may be best suited to conditions. Our orders for induced draft on shipboard are also increasing, as some marine engineers favor this system. A minimum amount of space is consumed, while results equally positive to that of forced draft are obtained. We have recently received and shipped an order for a large outfit of this kind for a French steamer."

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes, April 3, 1897:

	Wheat, bushels.	Corn, bushels.
Chicago	10,200,000	7,720,000
Duluth	6,699,000	50,000
Milwaukee	210,000	3,000
Detroit	258,000	82,000
Toledo	1,026,000	1,976,000
Buffalo	705,000	195,000
	19,098,000	10,026,000

As compared with a week ago, the above figures show, at the several points named, an increase of 449,000 bushels of wheat and 133,000 bushels of corn. Grain afloat at Chicago April 3—Wheat 349,000 bushels, corn 4,152,000 bushels, oats 739,000 bushels, rye 194,000 bushels, barley 97,000 bushels; at Buffalo, corn 113,000 bushels, oats 81,000 bushels, rye 69,000 bushels; at Duluth, wheat 497,000 bushels.

From the Commissioner of Navigation.

Editor Marine Review: Please accept my sincere thanks for the high compliment bestowed upon me in your issue of March 25. The commendation of a paper so ably conducted as the Marine Review, so broad in its treatment of public questions, and so thoroughly acquainted with the interests which it represents, is one of the highest rewards that can come to a public officer. I am writing to Mr. Flower thanking him for his expressions of kindness, which you incorporate in your article.

Eugene T. Chamberlain.

Washington, D. C., March 31, 1897.

At a recent anniversary dinner of the Stevens Institute of Hoboken, N. J., Commodore Geo. W. Melville, chief of the bureau of steam engineering, navy department, used some plain language bearing upon the struggle that is being made by engineers for greater recognition than is now accorded them in the navy. He said: "Official recognition has not yet been given to the work of the engineer, and particularly in naval matters has the engineer been unjustly treated. The attempt to deprive him of a just share of the rewards and emoluments of the naval service has impaired the efficiency of the organization, and has caused bitter internal strife, which is today our great naval weakness, and whose continuance invites disaster in time of battle."

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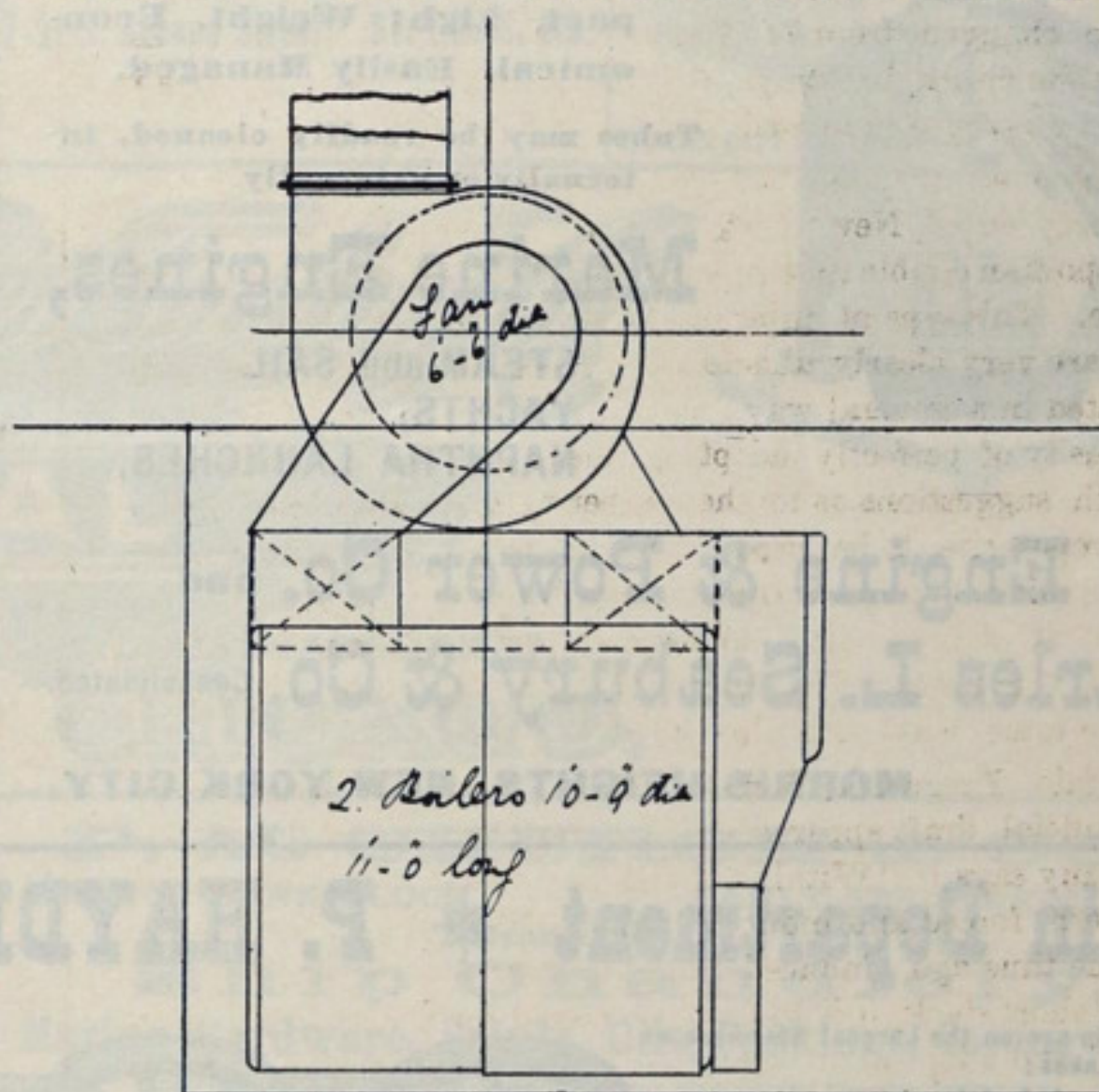
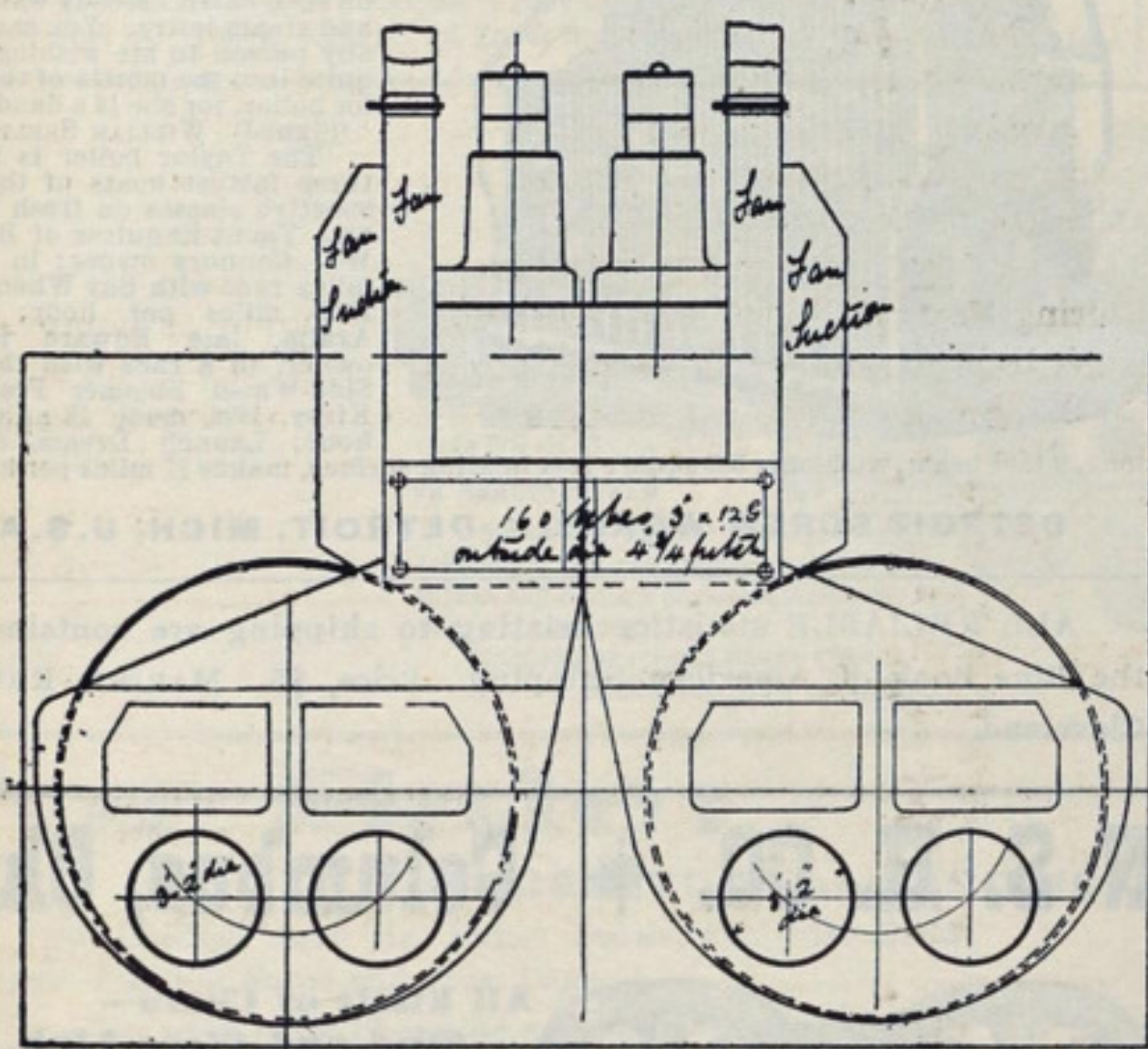
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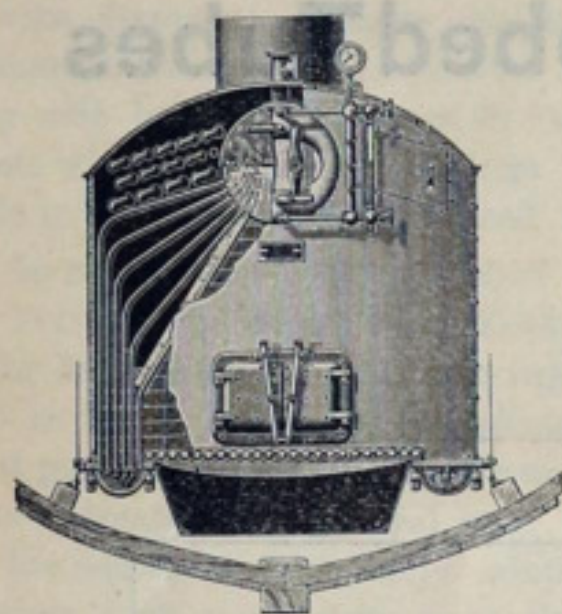
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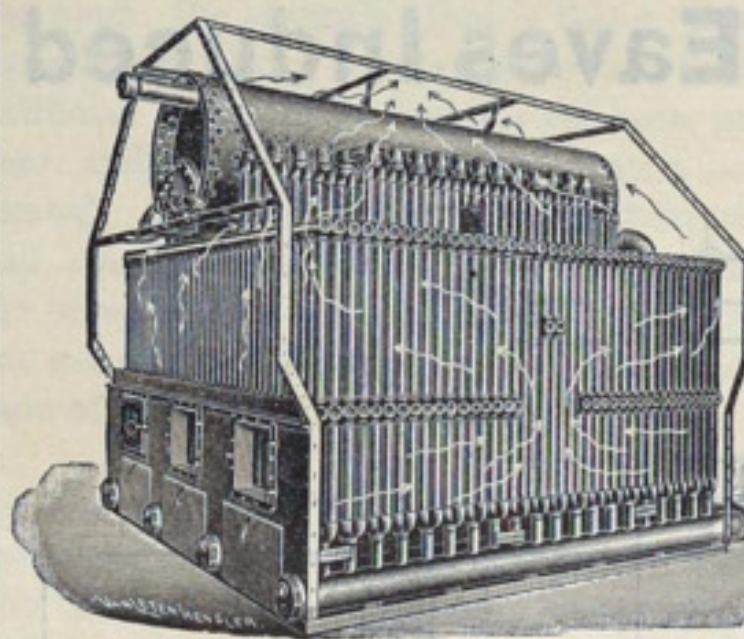
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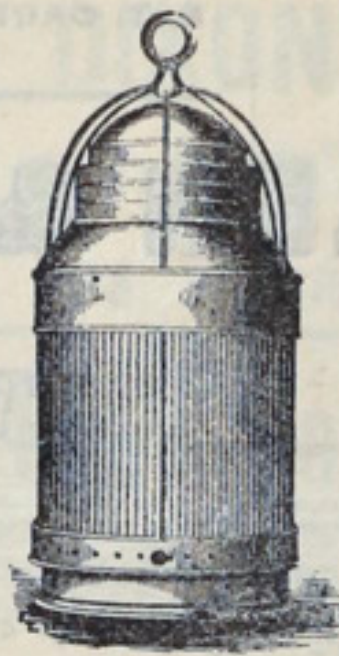
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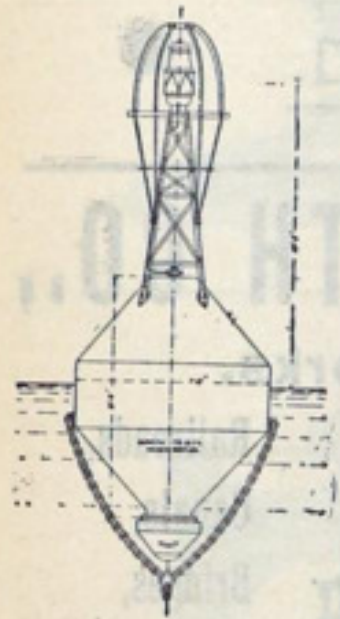
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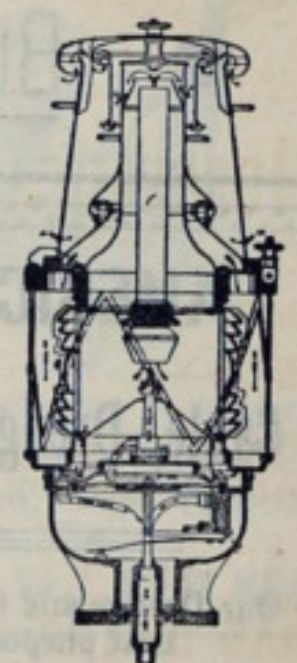
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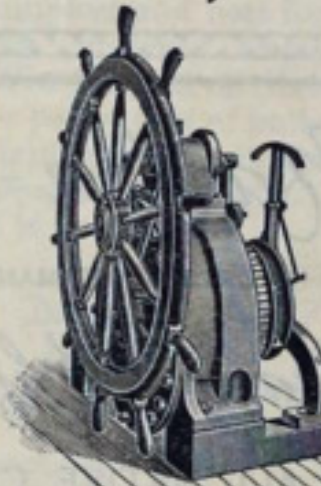
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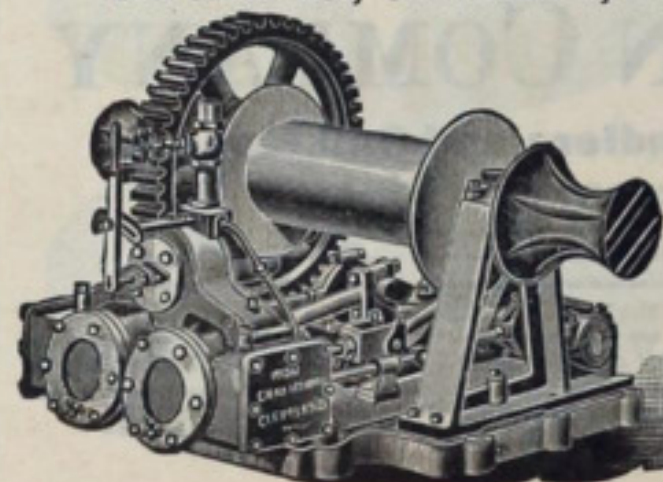
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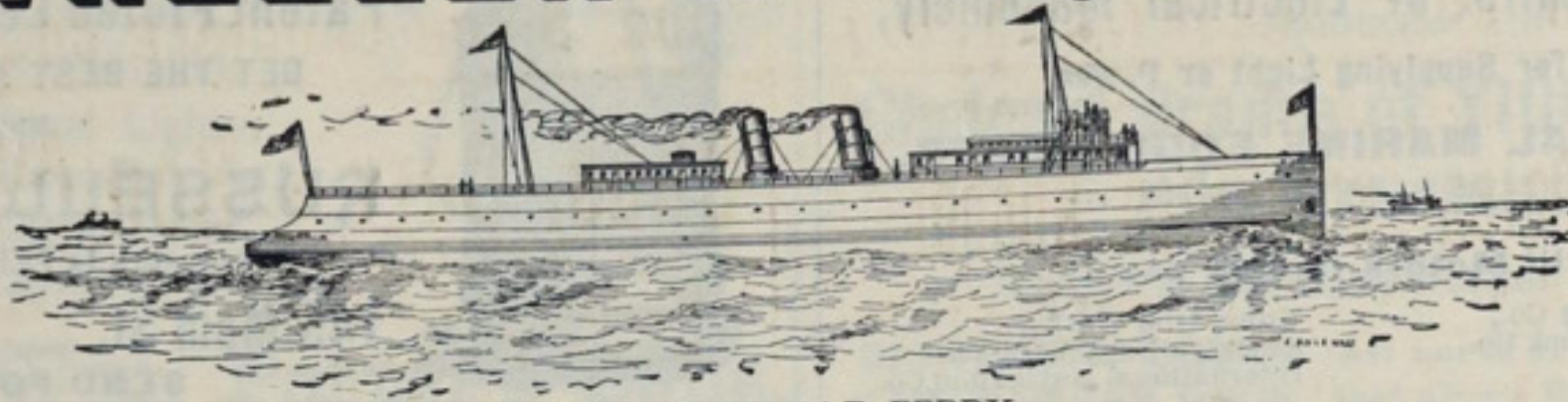
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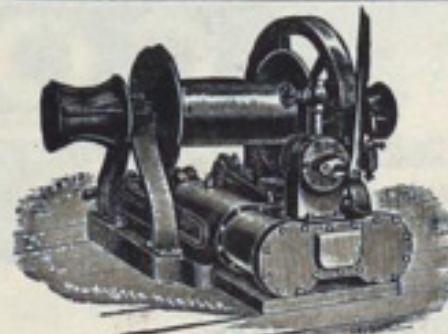
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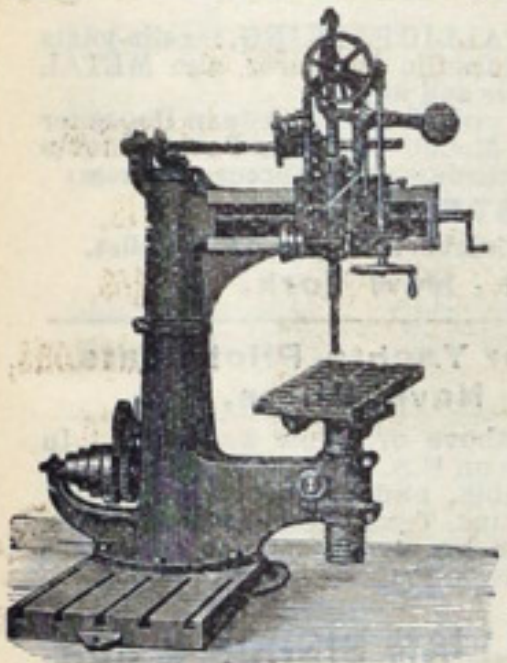
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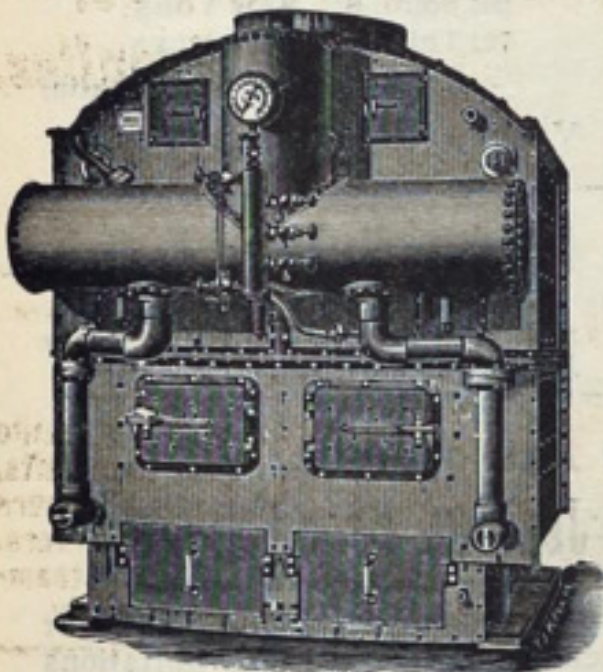
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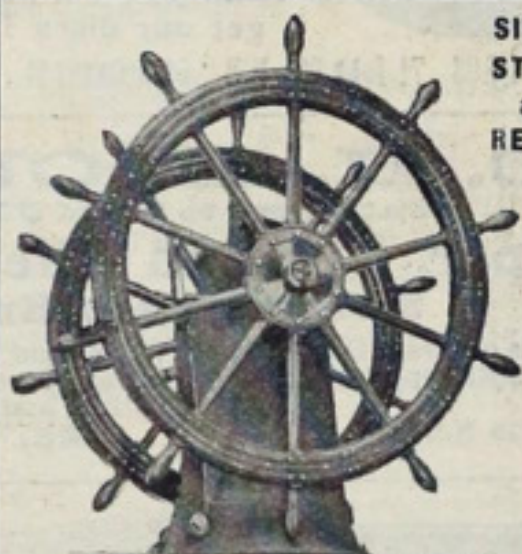
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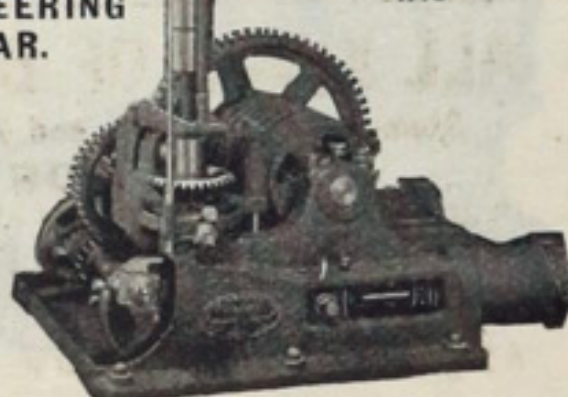


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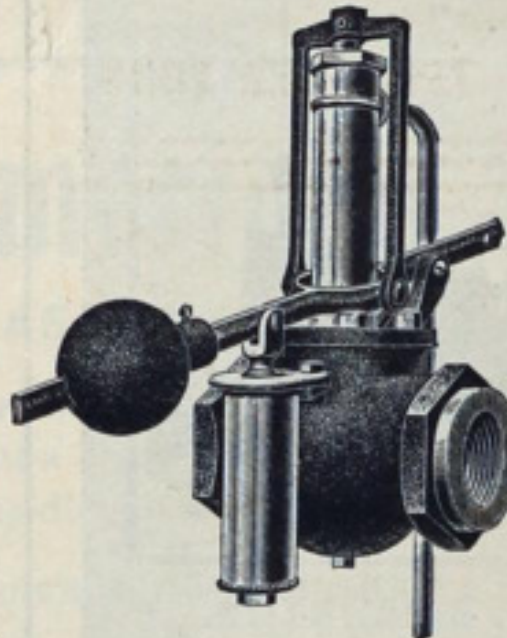


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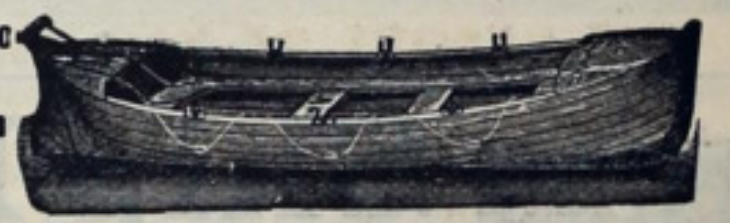
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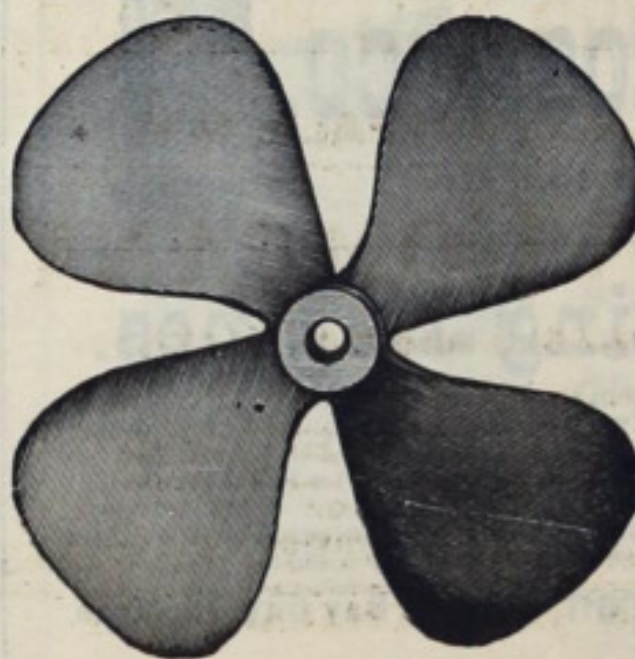
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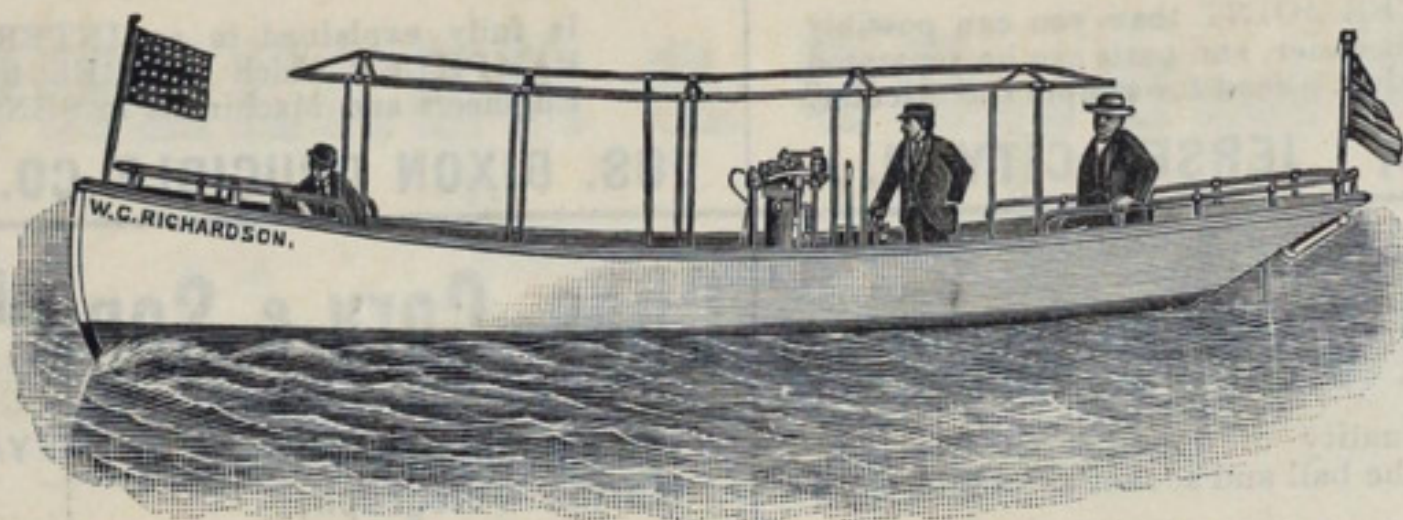


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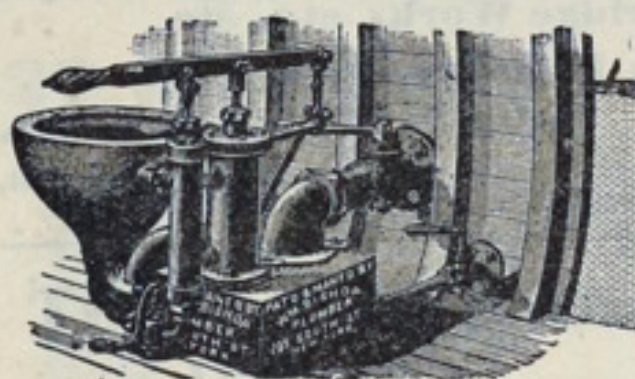
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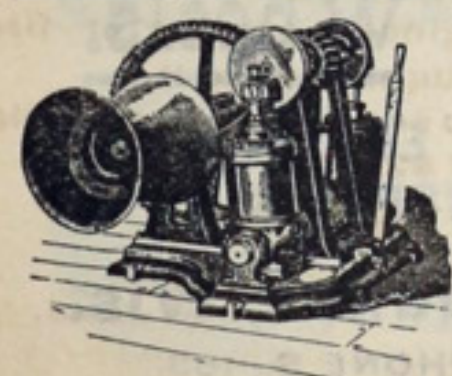
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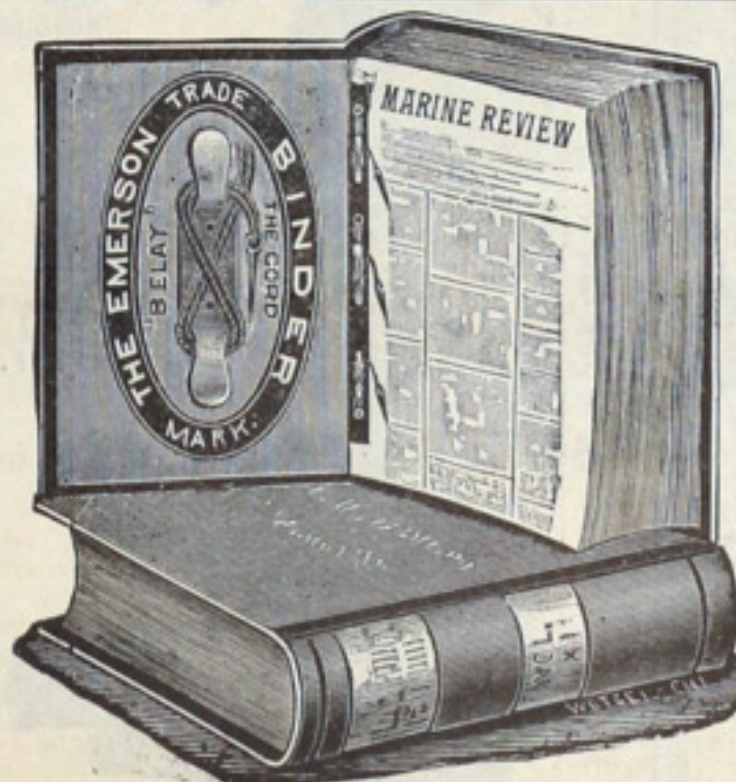
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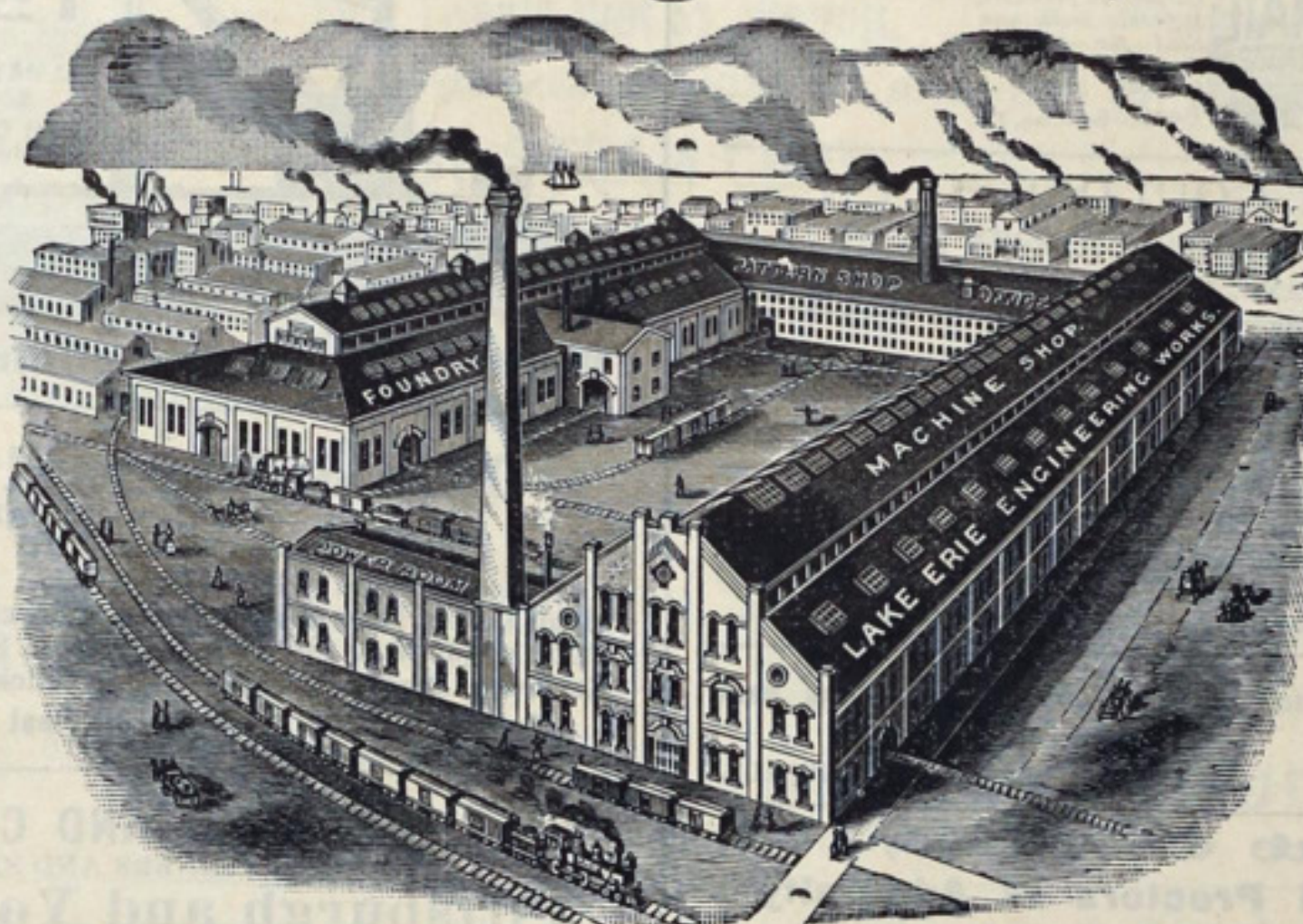
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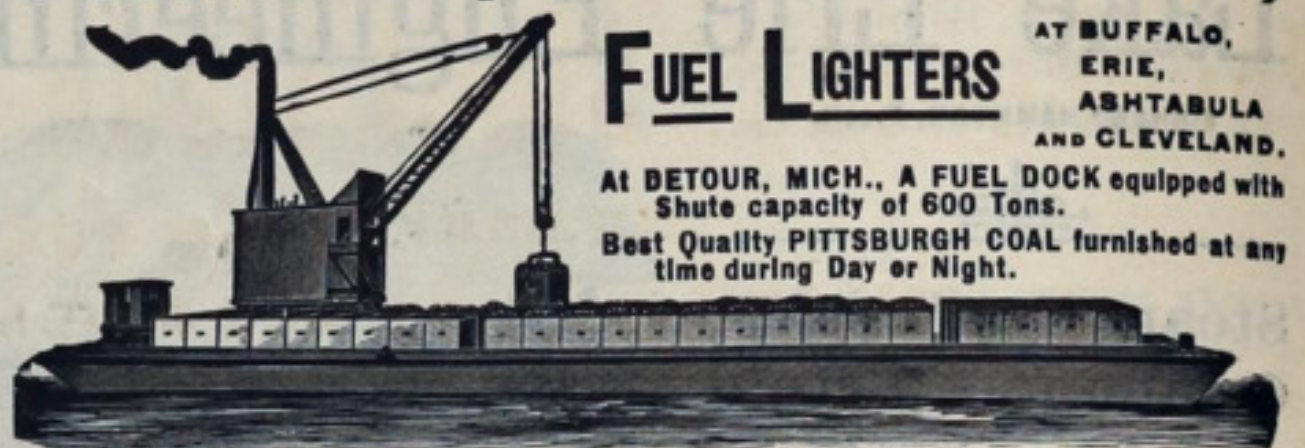
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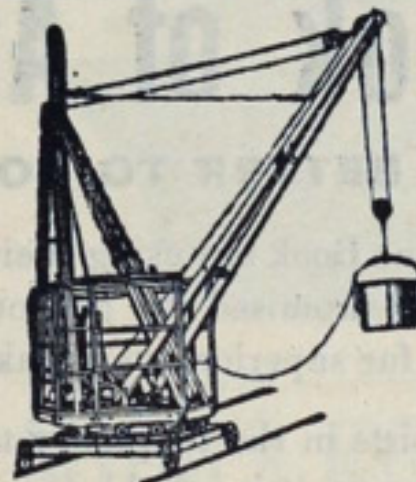
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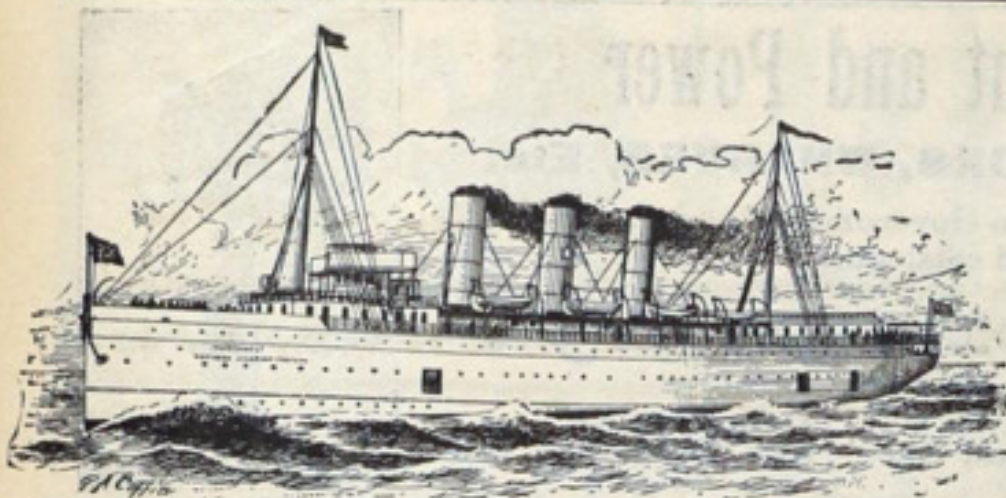
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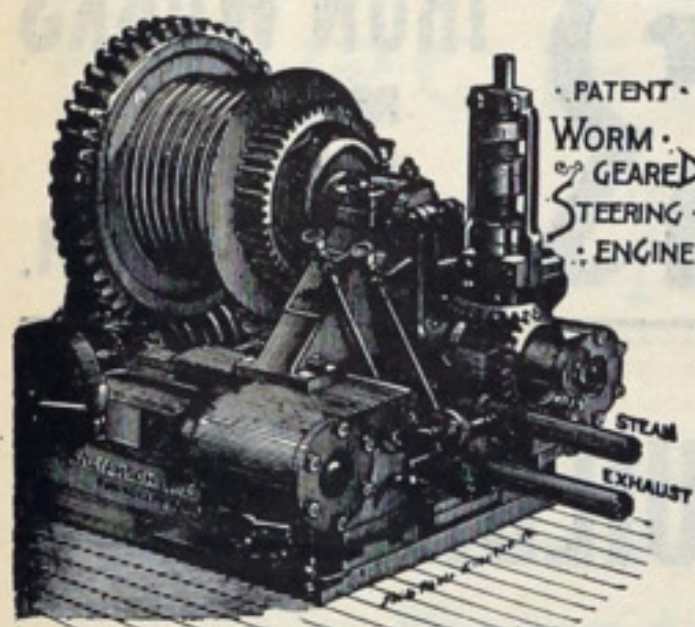
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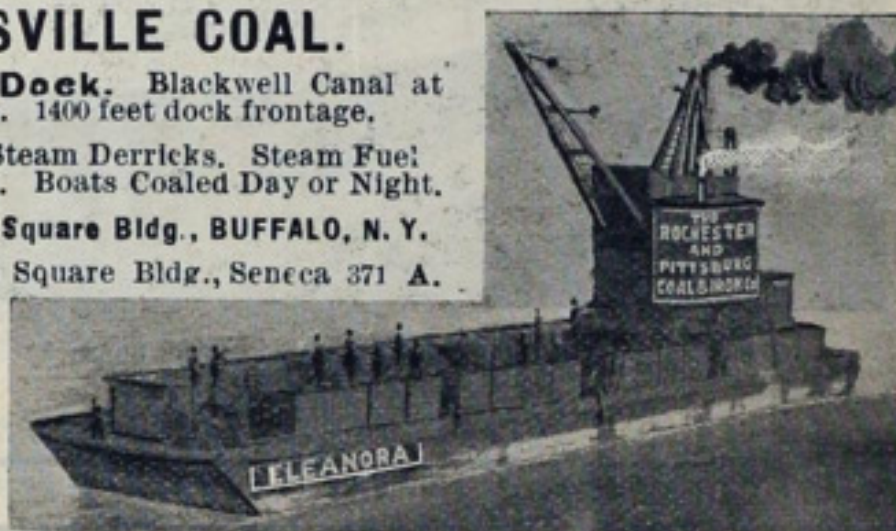
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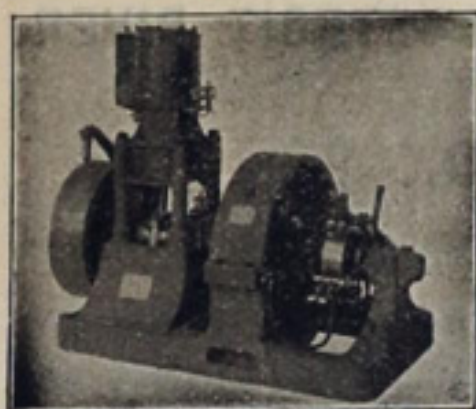
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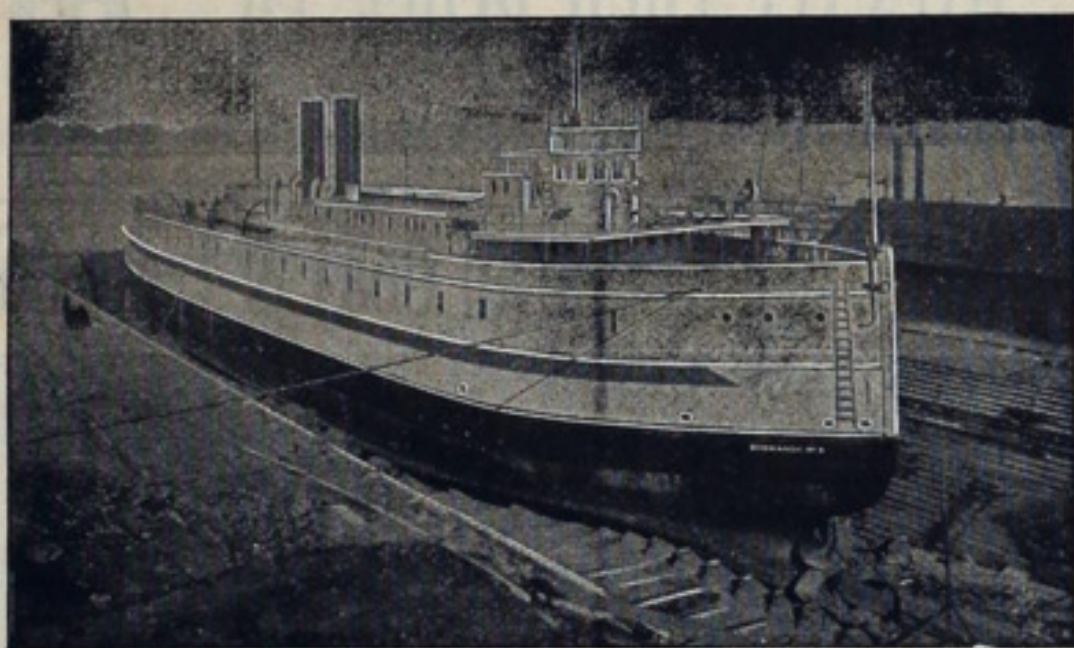
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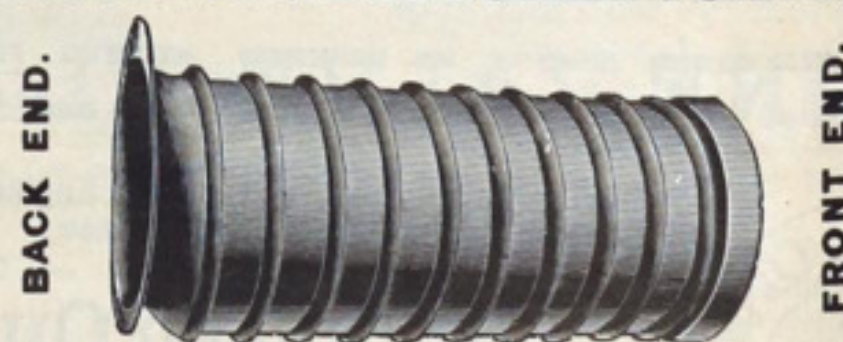
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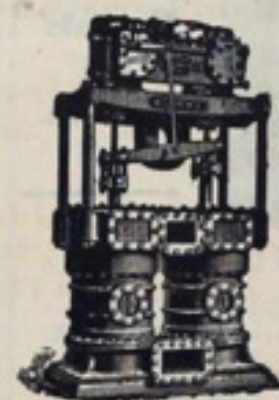
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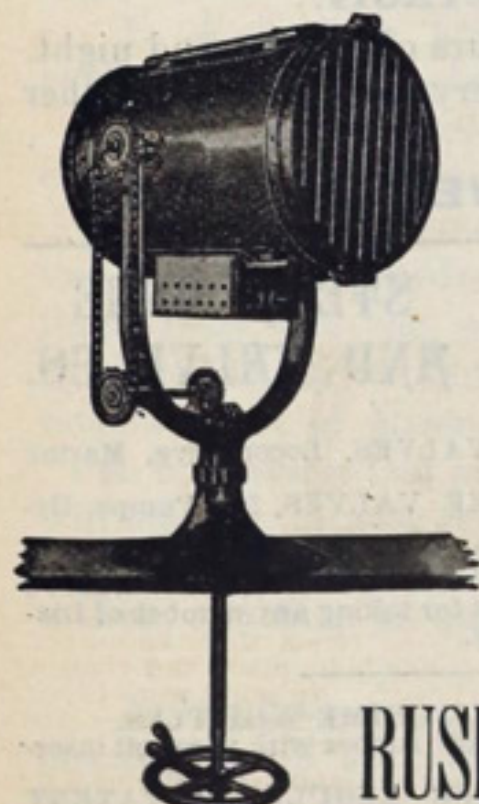
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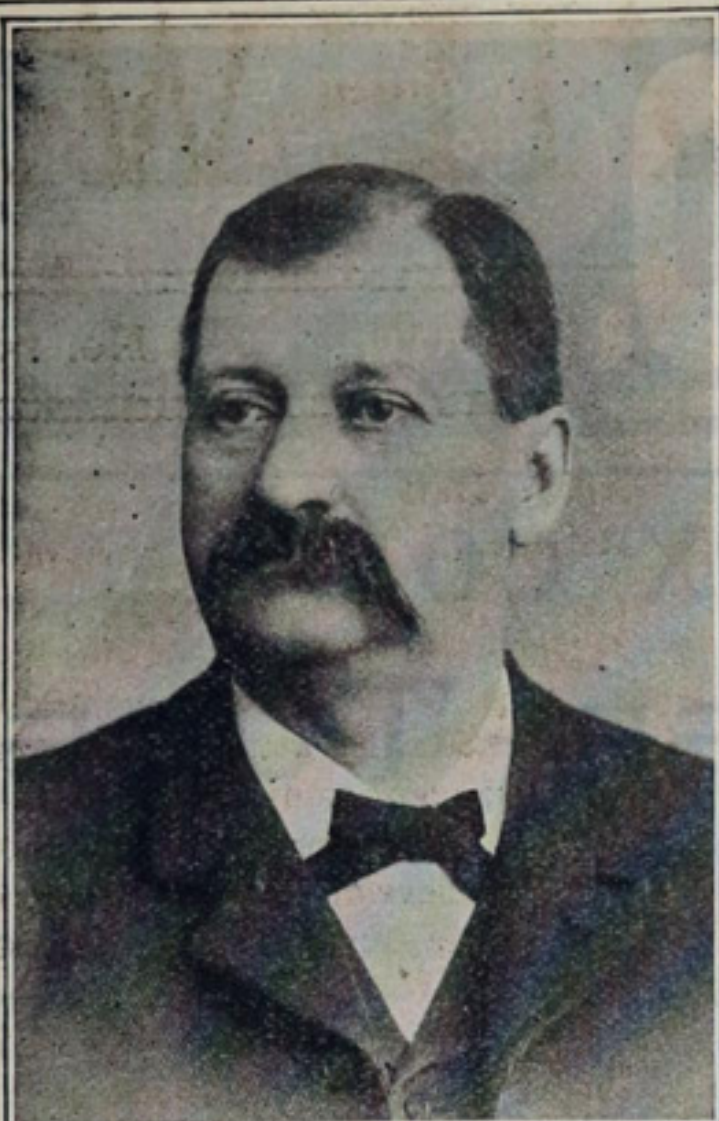
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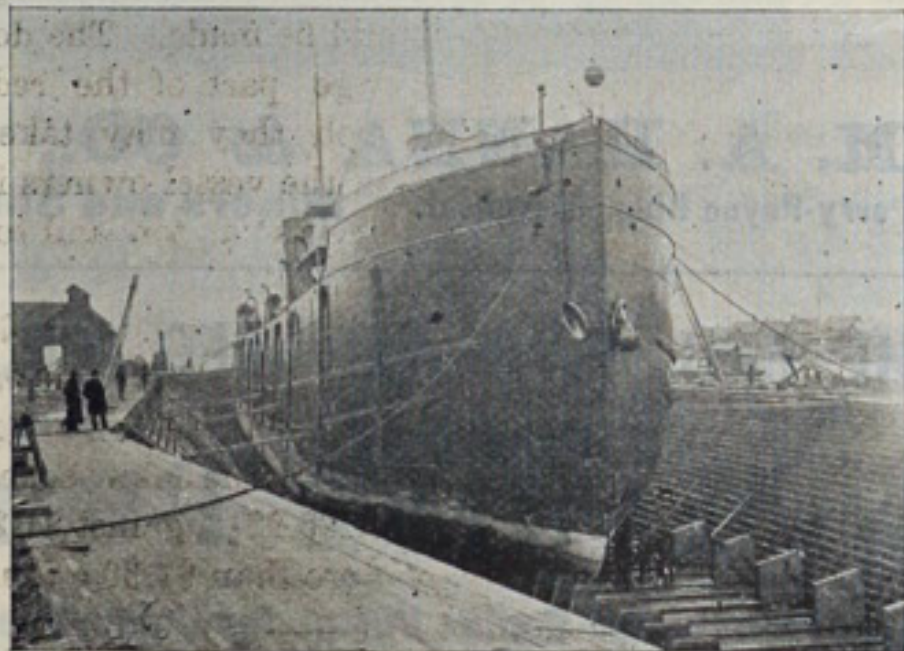


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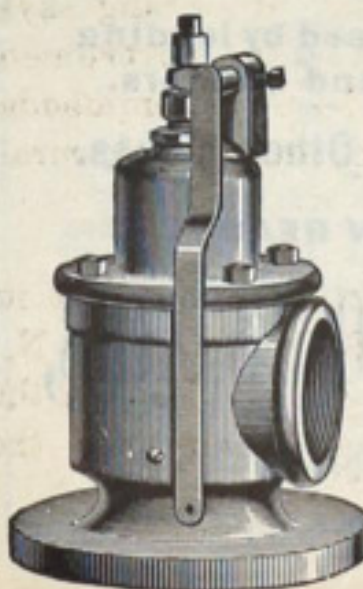
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